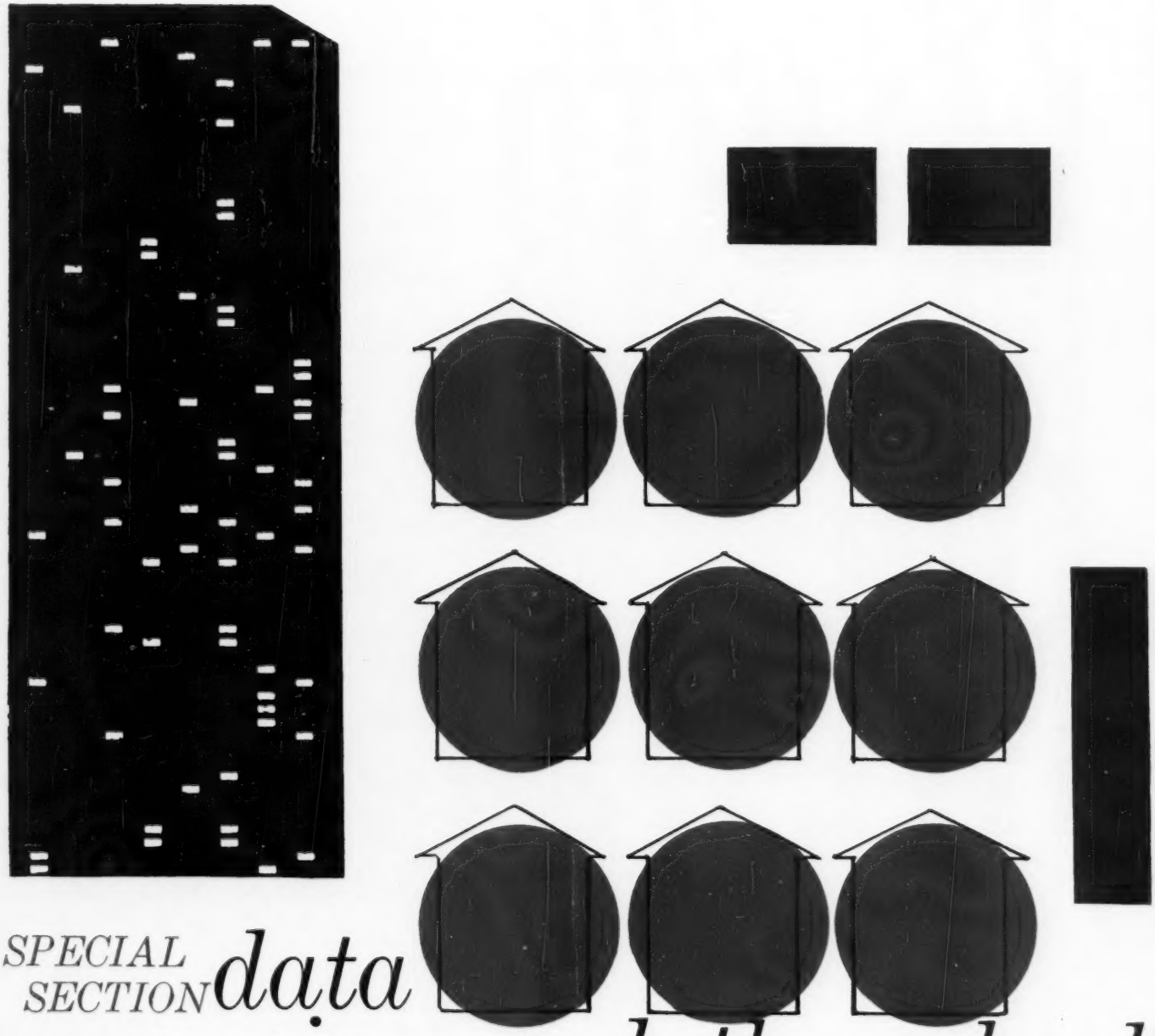
BUSINESS EDUCATION WORLD

NOVEMBER, 1961



SPECIAL SECTION *data processing and the schools*

TOUCH-MASTER FIVE

underwood

TEACHERS' PET

Typing teachers like the new Underwood TOUCH-MASTER FIVE because it combines

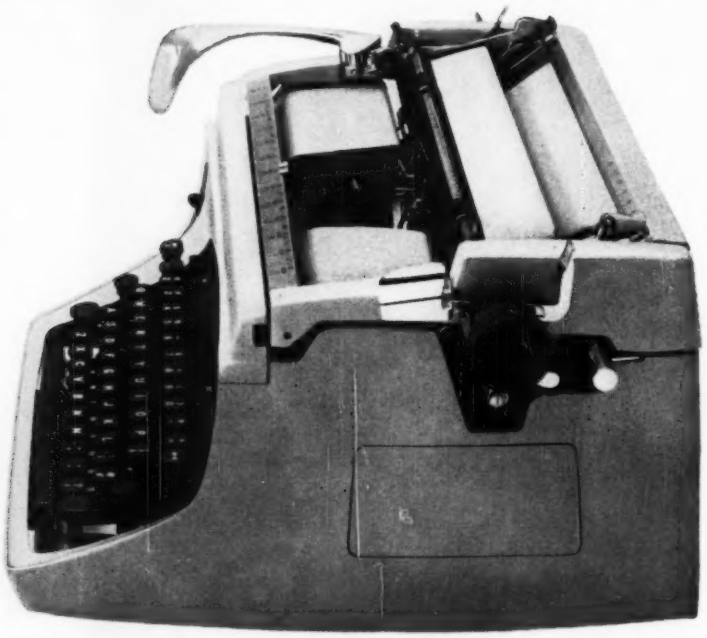
...Rugged construction to withstand rough classroom use

...Exceptional lightness of touch

...Exceptionally light, fast carriage return

...Instantly responsive touch tabulation

...Paper centering, title-heading centering and aligning scales and balanced margin indicators.



DICTAPHONE® PUTS YOUR GRADUATES 1-UP

WHEN IT COMES to getting the job *she* really wants, Dictaphone training can help by giving your graduate students a big advantage.

First, Dictaphone equipment is by far the most widely used dictating equipment in business today. Second, Dictaphone Corporation has made it specially easy to give this training by offering business schools a complete student course in handling the TIME-MASTER® transcribing machine and Dictabelt® records.

Practice belts include exercises in transcribing medicine, law, government, advertising and publishing, banking, insurance and other specialized forms of dictation. Thus, the student becomes familiar with technical terms in advance of her first job. A 200-page textbook is a basic element of the course.

YOUR SCHOOL can rent all the equipment and teaching aids needed to train 15 students in one Dictaphone course unit. With it you get full service on the TIME-MASTER transcribing machine. Give your graduates this extra jump on the jobs they want.

Dictaphone® CORPORATION
REG. U.S. PAT. OFF.

Dept. BW111, 730 Third Avenue, New York 17, N. Y.

Please send me your booklet, "On the Way Up Before the First Job."

NAME

ADDRESS

CITY | STATE

NOVEMBER, 1961

VOLUME 42, NUMBER 3

A McGRAW-HILL PUBLICATION

SPECIAL SECTION

FEATURE ARTICLES

SPECIAL SERIES

DEPARTMENTS

BUSINESS EDUCATION WORLD articles are indexed in **Business Education Index** and **Education Index. BUSINESS EDUCATION WORLD** is also available in a microfilm edition from University Microfilms, 313 North First Street, Ann Arbor, Michigan.

SUBSCRIPTIONS: Send subscription correspondence and changes of address to Subscription Manager, BUSINESS EDUCATION WORLD, 330 W. 42 St., New York 36, N. Y. Subscribers should notify publication promptly of any change of address, giving old as well as new address and including postal zone number, if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send form 3579 to BUSINESS EDUCATION WORLD, 330 W. 42 St., New York 36, N. Y.

BUSINESS EDUCATION WORLD

Editor
JAMES BOLGER

Assistant Editor
RAYMOND HAMILTON

Copy Editor
JEAN CATLIN

Editorial Associates
ALAN C. LLOYD
ROY W. POE
CHARLES E. ZOUBEK
FRED C. ARCHER

Contributing Editors
RICHARD A. HOFFMANN
JANE F. WHITE
HELEN H. GREEN
MARION WOOD

Production Manager
ELEANOR PERZ

Publisher
E. WALTER EDWARDS

Advertising Representatives:
McGraw-Hill Publishing Company, Inc.

Atlanta 3 — ROBERT H. POWELL, Jr., 1375 Peachtree St., N.E. Jackson 3-6951

Chicago 11—WALTER M. LANGE, 645 N. Michigan Ave. Mohawk 4-5800

Dallas 1—FRANK LeBEAU, The Vaughan Bldg., 1712 Commerce St. Riverside 7-5117

Denver 2 — JOHN W. PATTEN, Tower Building, 1700 Broadway. Alpine 5-2981

Houston 25 — JOSEPH PAGE, W-724 Prudential Bldg. Jackson 6-1281

Los Angeles 17 — NOEL HUMPHREY, 1125 W. Sixth St. Huntley 2-5450

New York 36—PAUL F. RADCLIFFE, ERNEST WIMPERIS, 330 W. 42 St. Longacre 4-3000

San Francisco 4 — ROBERT T. KOCH, 225 California St. Douglas 2-4600

BUSINESS EDUCATION WORLD, formerly The Key and The American Shorthand Teacher, is published monthly, except July and August, by the Gregg Publishing Division of McGraw-Hill Book Co., Inc. Publication Offices: Third & Hunting Park Ave., Philadelphia 40, Pa. EXECUTIVE, EDITORIAL, CIRCULATION, and ADVERTISING OFFICES, 330 W. 42 St., New York 36, N. Y. Officers of McGraw-Hill Book Co.: Edward E. Booher, President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary.

Subscriptions are solicited only from teachers, administrators, private-school owners and supervisory personnel engaged in business and distributive education. (Position and school connection must be indicated on subscription orders. Send to address shown in box at left.)

United States subscription rate, $4 per year, single copies, 50 cents; Canada, $4.50 per year; Latin America, $6.50 per year; all other foreign, $7.50 per year. Second-class postage paid at Philadelphia, Pa. Printed in U. S. A. Title registered in U. S. Patent Office.

THE BUSINESS TEACHER'S Problem Clinic

IF YOU HAVE a teaching problem, why not get it off your chest? It may well be that, by sharing it, you'll find that our Problem Clinic readers can help you work your way to a solution. It wouldn't be the first time it's happened; several of our problem-setters have found that the Clinic was just what they needed to clear up their difficulties.

Our current Clinic contest ends next April 25. For the best *solution* to someone else's problem submitted by that date, we are offering a prize of $25; for the second best, $15. For the best *problem* submitted by the same date, the first prize is $10; for the second best, it's $5. Feel free to send in your suggested solution to any problem already published in this space (along with a carbon copy, please). Our address: Problem Clinic, BUSINESS EDUCATION WORLD, 330 West 42 Street, New York 36, N. Y.

I AM TRYING to determine how my standards in shorthand compare with those of other teachers throughout the country.

At Helix High School in La Mesa, California, we offer a one-year shorthand course because it is basically a college prep high school with little opportunity to take many electives. The class standards are: 80 words a minute for 5 minutes of new dictation (taken from Business Teacher) is a C; 100 wam is a B; 120 wam is an A. Last year, three girls were able to do 130 wam for 5 minutes. Best of all, for the first time, one girl has taken 155 wam for 5 minutes and transcribed it accurately. I think this may be something of a record. Will interested teachers please let me know what has happened in their classes after one year?

I should mention, for purposes of correspondence, that, since we are not a commercial high school, only regular high schools need correspond.

MARY F. GARCIA
Helix High School
La Mesa, Calif.

MAY PROBLEM 1

MY PROBLEM ARISES when my students change from manual typewriters to electric typewriters. They are all eager to learn to type on the electric (the change is made at 40 wam), but they invariably begin to make many errors and quickly become discouraged.

I wonder whether any of you could advise me on what drills I might use on the electric typewriter. Also, do you have any suggestions on when the electric should be introduced—should I start my beginning students right off on the electric typewriter or is there a better time than the 40 wam point to change them over from manual to electric?

DIANE SKOR
Walsh School of Business Science
Miami, Florida

Suggested Solution

Dear Miss Skor:

It would be wonderful to have enough electrics to start all my beginners on! With only three electrics out of 28 typewriters, I use them for my poorest students, and you should see the new life the electric gives them. It has spurred several potential failures on to become better-than-average typists and has saved several from failing or dropping out.

I find transferring quite simple. I explain the differences between manual and electric and tell them that it will take three or four days for them to adjust to these differences. They do the same exercises that the other students do. Only one student has requested that he be transferred back to a manual—but before the end of the year he was asking to be given

another opportunity on the electric.

Students are allowed to sit where they please the first day of school, and the electrics are the last to be selected by first-year students. It doesn't take long for the other students to realize that their classmates on electrics are pulling ahead of them, and then they want to know when they will get a chance. The three students who are having the most trouble with typing at the end of each six weeks are placed at the electrics. In the three years that I have tried this, only one student has remained in the poorest group for more than one six weeks' period, and I believe this was due to chronic absenteeism more than anything else. On the days that a student is absent from an electric typewriter, there is always another student who wants to type there.

Second-year typing, shorthand and office practice students get regular practice on the electrics.

I say nothing to the students about speed on the electric; I emphasize the fact that electricity will free the student to concentrate on correcting faults, especially faulty touch. And it does! They watch me sit down first at an electric and then at a manual; they laugh with me when I reach out for the return with my right little finger or reach to throw back the carriage of an electric with my left hand. I tell them that they, too, will make those unnecessary motions a few times when transferring from one machine to another, but that it won't take them long to adjust.

Students love the electrics, but not half as much as their teacher does!

RACHEL N. DICKERSON
Hart County High School
Hartwell, Ga.

Oil Industry D.E. Committee Meets with DECA Conference

LAST APRIL, the Distributive Education Committee of the American Petroleum Institute met in Chicago in conjunction with the 15th National Leadership Conference of the Distributive Education Clubs of America. The American Petroleum Institute has had a Distributive Education Committee composed of interested oil men for the past six years. The meeting in Chicago marks the second time that these oil industry leaders have met concurrently with the DECA National Leadership Conference.

According to C. K. Detwiler, chairman of the Committee and marketing training director for Atlantic Refining Company, seventeen major oil company general sales managers and training directors were in attendance for the three-day meeting.

The American Petroleum Institute is one of the few trade associations that have activated a working D.E. committee composed entirely of marketing leaders. This is the first committee representing a single industry that has elected to hold its working sessions concurrently with the students and teachers participating in the National Leadership Conference. This industry-level API committee is made up exclusively of oil men—representatives of major oil suppliers, oil jobbers and service station dealers. According to its charter, the purpose of the committee is:

> To promote oil industry co-operation with public school Distributive Education programs and in training young men in service stations and other oil marketing jobs.

This objective is being accomplished through two major approaches: (1) Projects are sponsored directly by the committee; (2) Activities are recommended to member companies.

The committee has directly sponsored the following activities:

- It co-operated with the University of Texas in the validation of a special Service Station Management Training Kit.
- It publishes a guidance brochure, *Petroleum Marketing—A Field with a Future*, distributed free to D. E. co-ordinators.

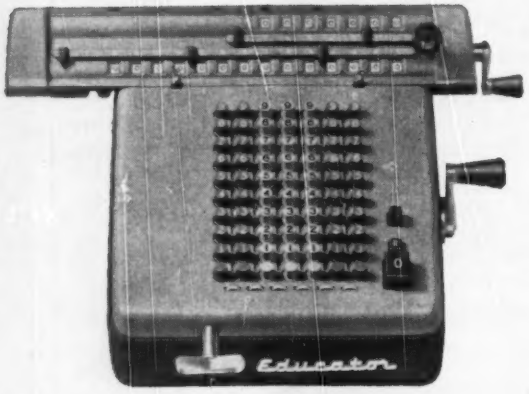
OFFICERS of API's D. E. Committee: chairman, C. K. Detwiler, Atlantic Refining Co.; secretary, A. Paul Elliott, Leonard Refineries; vice-chairman, J. J. Berwald, Standard Oil of California.

- A filmstrip, *D.E.—What It Is; How It Works*, has been made available and is being used by D.E. teachers as well as oil companies.
- An attractive poster, "After Graduation—What Will You Do?" is distributed to all teachers to help them inform students about Distributive Education.

Other projects have been completed by the committee, and still others are in the planning stage. In addition, through the encouragement of the API Distributive Education Committee, a number of oil companies have taken individual steps to support D.E. Here are some of the things reported at the Chicago DECA meeting:

- Each of 35 oil companies has designated a company man to help generate more support for Distributive Education within its own company.
- Twelve oil companies subscribed $6,500 to the DECA Foundation budget in 1960.
- A number of companies regularly report "D.E. Success Stories" in their company house organs.
- One major oil company has appointed a full-time man to see that its organization works more closely with Distributive Education.
- At least ten major oil companies now regularly send their field representatives to state and local D.E. leadership training conferences.

The next meeting of the API Distributive Education Subcommittee is scheduled for next May 16-19 at the Americana Hotel, Bal Harbour, Fla.



Employment Agent!

In this machine age, the ability to run a calculating machine is as essential for a girl as the ability to type. That's one reason why so many forward-looking educators are using modern Monroe Educator Calculators in their business courses. Once a student has learned how to operate the Educator, she can run just about any office business machine. (In many cases, she'll find a Monroe Calculator standard equipment in her office.) More than that, she'll have learned well—for Monroe supplies a complete 30-lesson office practice course with the machine. The problems posed are basic to any office operation. Perhaps the Educator would enable you to better prepare your business students for the world of commerce. Why not find out? Contact your local Monroe representative now. (He's listed in your phone book.) Or write directly to us. **MONROE**

GENERAL OFFICES: ORANGE, NEW JERSEY • A DIVISION OF LITTON INDUSTRIES

A Time To Learn

Organize your teaching time

MARY WITHEROW
Roosevelt High School, St. Louis, Mo.

WHY IS IT that a teacher's technique results in an outstanding performance in one class but the same device falls on deaf ears in another group? May I suggest that organization of time is the answer.

Whether we consider such broad issues as mechanization and the race for space or such everyday matters as TV dinners, the fact is that we have become strangely time-conscious. If this is true of the world outside the classroom, why shouldn't it apply inside the classroom as well?

I am not inclined to be concerned so much with *speeding up* the learning process as with *organizing* it. It really isn't going to do us any good to get people through college by the age of 16 unless we have better graduates. We are not dealing simply with the passage of time; it's what we do with this time that ultimately counts.

The difference between the individual who becomes buried in mundane routine and the one who becomes a company president may not be a difference in ability; rather it may be a matter of organization. A teacher must really be a master at determining when the class is mentally ready for the next step. When is repetitive practice justifiable as a means of perfecting a skill, and when will one more period of repetition serve only to dull the student's interest? When is it wise to maintain the same routine of presentation so as not to confuse students, and when must this routine be varied to provide the proper amount of motivation?

The first step in organization is to recognize the relative importance of various tasks. This is not a hit-or-miss proposition—it requires planning. Stop long enough to get the overview and the day's tasks will fall into proper perspective. I used to grade many more typing papers than I do at present, and I am thoroughly convinced

REPRINTS AVAILABLE

THE TYPING TEACHER AS A TECHNICIAN*—a series by Alan C. Lloyd on the development, protection, correction, and refinement of basic typing skill.	16 pages	50¢ per copy
HOW TO TEACH TRANSCRIPTION*—consists of a series of four articles that constitute a detailed outline for conducting a transcription course.	12 pages	35¢ per copy
Rx FOR EFFECTIVE SHORTHAND TEACHING*—a ten-part series by Robert L. Grubbs offering a detailed plan for real achievement in shorthand.	36 pages	$1.00 per copy
TEACHING THE FUNDAMENTAL ELEMENTS OF BOOKKEEPING-SERIES I*—a reprint of a five-part series by Freeman, Hanna, and Kahn on how to teach journalizing, posting, trial balance, and other first units of bookkeeping.	12 pages	35¢ per copy
TEACHING THE FUNDAMENTAL ELEMENTS OF BOOKKEEPING-SERIES II*—a ten-part series by Freeman, Hanna and Kahn covering such topics as special journals, inventory, depreciation, the profit and loss statement, etc. (Combination price for SERIES I and SERIES II—$1.00)	24 pages	75¢ per copy
THE SECRETARY: GIRL OF THE YEAR—a factual, informative booklet that describes the national secretarial employment picture and relates through case histories what it's like to work in 11 different industries and professions. Good for guidance.	24 pages	25¢ per copy $2.00 per doz.
WANTED: ALTER EGO—a special report on executive secretaries as seen through the eyes of 10 such persons.	8 pages	25¢ per copy
SPECIAL INDUSTRY TERMS IN GREGG SHORTHAND—200 most-used terms with appropriate shorthand outlines for 15 different industries. A total of 3,000 special industry terms.		$2.00 per set

**Ideal for Methods Classes*

Gregg Magazine Reprint Dept.
330 W. 42nd St., New York 36, N. Y.

I am enclosing $——— for which please send me:

———copies of *The Typing Teacher as a Technician @ 50¢ each*

———copies of *How to Teach Transcription @ 35¢ each*

———copies of *Rx for Effective Shorthand Teaching @ $1.00 each*

———copies of *Teaching the Fundamental Elements of Bookkeeping, Series I @ 35¢ each*

———copies of *Teaching the Fundamental Elements of Bookkeeping, Series II @ 75¢ each (Combination price, Series I and II — $1.00)*

———copies of *The Secretary: Girl of the Year @ 25¢ each*

———copies of *Wanted: Alter Ego @ 25¢ each*

———sets of *Special Industry Terms in Gregg Shorthand @ $2.50 per set*

Cash or check for full amount must accompany order when less than $10.00. On orders totalling $15.00 or more, deduct 15%. On orders over $30.00, deduct 25%.

Name .....

School .....

Address .....

City ..... State .....

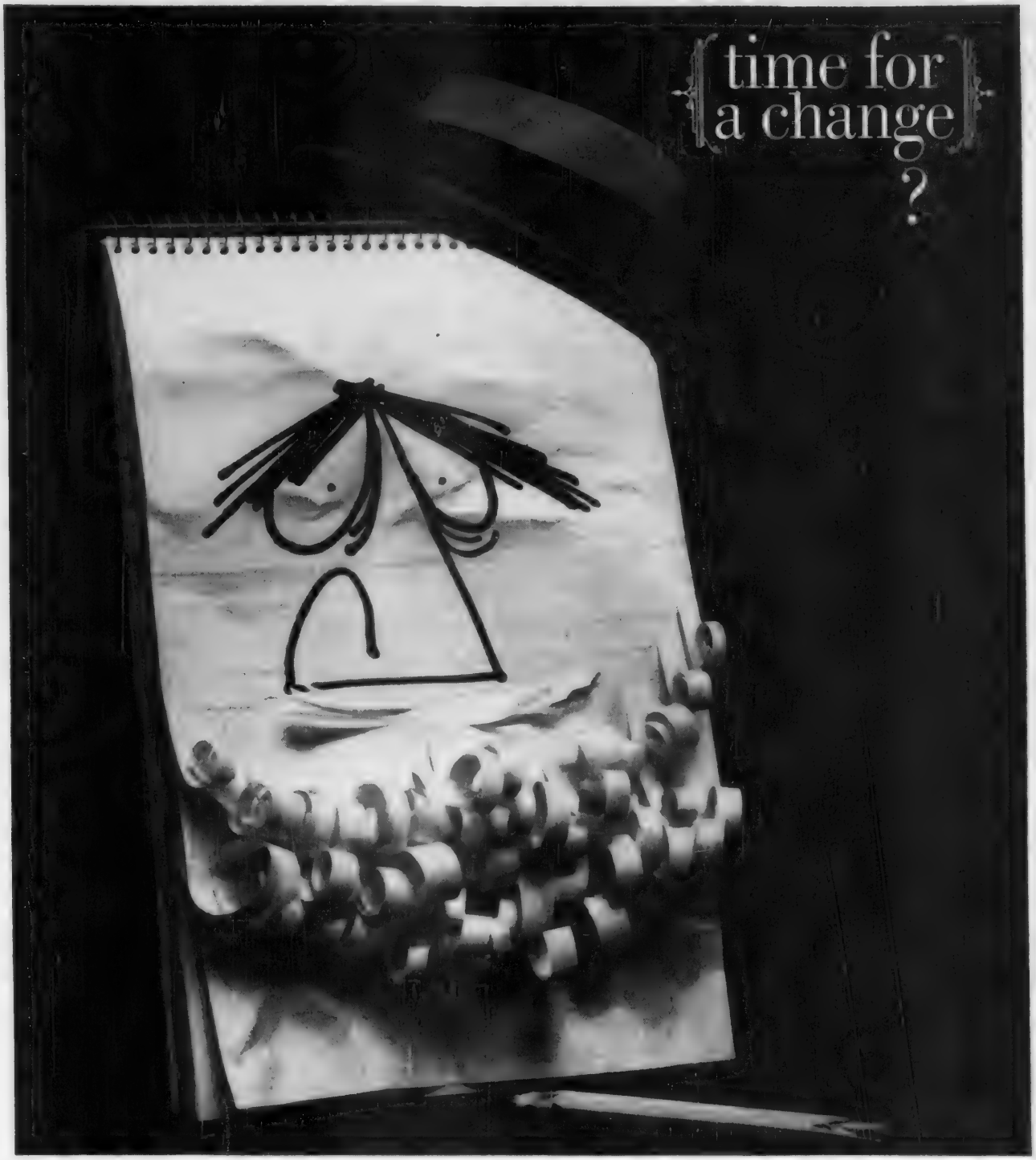
that I did no better job of evaluation then than I do now. In beginning classes in particular, *how* a student types is as important as *what* he types.

Once the relative importance of the work has been established, the next step is to set up a schedule that will enable you to meet deadlines. Don't dally over a problem—take a decisive action and keep moving. I don't mean that you should never take time to reflect, but I do insist that competition is keen and many opportunities are lost by the person who hesitates needlessly. You'll make mistakes—we all do—but it's your reaction to a mistake that counts. It can crush your efforts, or it can make you more determined to succeed.

Once you've chosen the rush job with which to begin work and have a schedule that will enable you to complete the job on time, don't let side issues distract you. Many of us have had a pet dream that we nursed for a long time, only to find that the same dream came to someone else who caught the vision and converted the dream into reality.

To show how organization can be applied in the classroom, let me take a concrete example. Suppose you want to teach the well-known typing unit on tabulation (and I am a strong exponent of the unit plan). Take some short drill using the tabulator for review; don't intimidate the class by throwing a hard problem at them to begin with. Explain the backspace or diagram method to the class as a whole first; repeat it until the majority, through daily drill, are setting up their problems without trouble; then continue to help the slower students individually. Try some such variation as tabulations within a letter or manuscript, or tabulations with columnar headings. Speed up the exercises with some timed drills, try some other typing problems for a few days, and then return to the tabulation to see whether the learning process can be recalled.

You say that this is nothing new, that it can be found in many texts, or that you've been doing it for years. But I am simply reminding you that, once you have a unit well organized, stick to your timetable so that you can cover the most material and still not waste the students' time. Then keep your goal constantly in mind—"every member of the class a tabulation typist"—and you will discover that you have found the answer to the problem of time.



No point in hanging on to archaic methods in this age of striking improvements. Stenography is a case in point. Machine method shorthand is not only much easier to learn (evidence indicates that students attain proficiency at about twice the old rate) but amazingly accurate at far greater speed. Today in reporting, in science, in medicine and government machine shorthand is rapidly becoming standard. More and more businesses are starting to prefer it. Complete experience reports • must reading for educators • are available.

Stenograph®
SHORTHAND MACHINE

STENOGRAPHIC MACHINES, INC. B-1161
8040 North Ridgeway Ave., Skokie, Ill.

Please send me full information on Stenograph —modern machine method shorthand.

name _____

present position _____

school name _____

address _____

city _____ **zone** **state** _____

the compact office electric by Smith-Corona

Here is the most teachable typewriter ever made . . . the new Compact 200 by Smith-Corona. It is compact in appearance and in fact . . . and sensibly priced at about what you'd expect to pay for a manual.

The Compact is a full-featured electric office typewriter, yet it takes up no more space than a manual. Here in one compact package you get a teaching tool with a full-sized electric keyboard . . . full-sized carriage with automatic return . . . automatic repeats. There are no dual-purpose keys or hidden controls to confuse the student. No gadgets or unnecessary extras. And no discipline hazards. The Compact 200 is "all business."

Of course, it's important today to teach **electric** typing, because modern business calls for typists familiar with electric machines. And in school or out, there is no electric typewriter more economical, more efficient than the new Smith-Corona Compact 200.

To see it at work in **your** classroom, call your Smith-Corona representative. And ask about the complete portfolio of teaching aids available.

SCM

SMITH-CORONA MARCHANT

NOVEMBER, 1961
VOL. 42, NO. 3

BUSINESS EDUCATION WORLD

SPECIAL SECTION:

data processing and the schools

Illustrations by Stanley Stamaty

TO MOST BUSINESSMEN, data processing is a fact of business life, and one that many of them have been living with for some time—to their considerable profit, in most cases. Electronic data processing is available to just about every business, whether it's small, medium or large. The really big companies can afford to have their own giant computers. Firms of medium size can usually manage to buy at least one or two of the more modest data-processing machines. Even very small companies can have their bookkeeping done for them at one of the many data-processing centers that are springing up all over the country. The computer's time is expensive; a fee of $35 an hour is typical for such service. But once a company's paperwork has been programed for a computer, only minor changes are necessary from week to week or month to month, so that a complete monthly bookkeeping operation seldom consumes more than an hour of the computer's time. The firm is usually happy to pay the $35.

Business has faced the fact that data processing is here to stay, and the shape of things to come in the business world is already fairly well defined.

No such situation exists in business education. To most business teachers, data processing, although it is no longer a strange term, is still a shadowy one that seems to carry a vague threat with it. Many teachers wish automation would go away and leave them alone.

Since it is not going away, the big question becomes: What part will our schools play in training future employees for the automated office?

Where Do We Go from Here?

Although it's not hard to find an occasional business educator (or businessman) who has definite convictions in this matter, there is no real consensus. Some schools, however, are not waiting for a consensus. They are instituting programs of instruction in keypunch operation and machine accounting, on the sensible assumption that any firm, even a small local one with no computer of its own, can do a lot with keypunch equipment and accounting machines, both for in-plant purposes and in preparing materials for use with an outside computer.

The growing desire of many schools not to be left at the post in the data-processing race has prompted some institutions of higher learning to set up data-processing workshops. One of the best of these was held last June at the University of Dayton as part of Ohio's Co-operative Office Education Program. It was announced only after long and careful preparation by Francis G. McGovern and Robert E. Kriegbaum of the University's School of Business Administration, and Robert D. Balthaser, state supervisor of business education for Ohio; and it required the workshop participants to make direct, intensive use of the University's multi-million-dollar data-processing installation. By the end of two weeks, this first-hand experience, supplemented by talks and demonstrations by a series of experts from industry and education, had taken the mystery out of data processing.

In the next nine pages, we present condensed versions of talks given by three of the workshop speakers. These are followed by a description of a data-processing course at Edison Technical School, Seattle, that has been in successful operation for more than two years.

the impact of data-processing techniques and the information systems concept

Brig. Gen. FRANCIS C. GIDEON
Director, Data System, Hq A.F. Logistics Command
Wright-Patterson Air Force Base, Ohio

BACK IN 1831, a brilliant young Frenchman, Alexis de Tocqueville, visited America to study the errors and shortcomings that he expected to find in American democracy. He felt that the triumph of democracy was inevitable (though he didn't seem enthusiastic about this prospect); but he wanted at least to prepare adequate safeguards in his own country against democracy's defects. He wrote later: "I sought [in America] the image of democracy itself, with its inclinations, its character, its prejudices and its passions in order to learn what we have to fear or to hope from its progress."

Today, another revolutionary movement is under way—not of the same order as the surge of the idea of democracy, but of great significance nevertheless. This revolution, this fundamental change in the manner in which we collect, transmit and use information—the automation of the flow of information—is silently but surely changing our lives; it is having a most profound effect on business. I feel that the force of this revolution is irresistible. If this is true, we should study it and resolve, to use de Tocqueville's words, "to learn what we have to fear or to hope from its progress."

In assessing the nature of this movement, it is not a new thought that its development can be considered a second industrial revolution. It may well have an effect on our society more profound than the first one had.

The first industrial revolution was essentially a mechanization of the production process. It resulted in the freeing of man's hands from drudgery. The second industrial revolution will free man's mind from tedious, repetitive, uncreative tasks and thus permit him to extend his mental capabilities and scope of control. The end result will provide for even greater freedom of man's hands and mind, with greater over-all impact on our society.

Today's computing, communicating and data-generating devices, characterized by their self-contained programs, allow for decisions of a dynamic nature and of a very high order of logical ability. These qualities, coupled in present devices, allow communication and processing of management information at speeds and accuracies heretofore beyond our comprehension.

One fact emerges quickly in discussing information systems or data systems: We do not have a vocabulary in which we can have complete confidence. Whereas we have a fairly precise language available to us for description of physical properties of things and for describing actions and interactions in the physical sciences, we do not have the same asset in the world of ideas—and much of the discussion of information systems must take place in this world. Since the field is new, the codification of its laws is only in its infancy.

Using our limited and imprecise vocabulary, let us then examine some of the major characteristics of electronic computers and the art and science of their use. Let me stress that I am concerned with the entire cycle, from identification of management needs, through the laying out of basic processes by which the needs can be met, to the eventual coding of computers and processing of data. Every link in the chain is of major importance.

One of the basic characteristics of automated data systems is the ability to react with absolute precision. Once the program is established—for one condition or ten or a hundred thousand—the machine reaction will always be the same. It is not bored by monotonous repetition or subject to error due to fatigue.

Through the ability of the computer to apply logic identically to a series of similar situations, it is sometimes called an electronic brain. This is, of course, a misnomer, although we are nearing the stage where the machine can learn through its experience and apply that experience to new situations. Perhaps the greater trait today is loyalty, for the machine will do precisely that which it has been told to do.

This characteristic of precision in operation leads to a companion: the requirement for absolute precision in working out the machine instructions. If a machine is instructed to do thus-and-so when a particular condition is reported, it will do just that. No longer will a skilled clerk interpret an obvious error, make a quick penciled correction and send the information on its way. The machine will reject the bit of information (if program instructions have anticipated an error or possible error) or it will proceed to act on the erroneous data.

Before precise instructions can be prepared, a thorough analysis of the basic procedures of the organization must be made. Often this analysis brings out many things that were assumed to be understood and on which proper action should have been taken—things that in reality have only been generally understood and on which action has not been taken at all or in a variety of ways by different people, depending on mood, whim or literacy. This requirement for thorough analysis leads to slow, evolutionary development of major systems.

Much of the literature on information systems empha-

sizes the matter of formulation of major business decisions, forecasting abilities and capability to integrate a variety of business functions into a more cohesive whole. These are the end objectives of data automation and they are very sound, but the wonders of the very sophisticated systems are laid on a solid framework of lesser, basic data systems that in themselves are simple and unexciting. Seldom are the initial applications exotic. The first attempts in business are generally in the separate areas of inventory control, billing, payroll and other accounting systems. Only through a period of evolution are the end objectives of a large, integrated system met. Haste to meet the end objectives before learning the basic lessons of individual systems often causes early disappointment.

The precision with which machine programs must be developed leads to another characteristic: the high initial cost of development of automated information systems. The most powerful tool of automation, the computer, requires the reduction of any desired action to simple binary arithmetic in order to take advantage of the on-off characteristics of electronic circuitry and thus permit the speed-of-light action within the computer.

These actions are based on a thorough dissection of the operations of the business and their reconstruction into statements of the best way to do the required tasks. These statements become tedious, complicated and costly because of the extreme simplicity of the tools and the many instruction steps necessary to program even the simplest action.

Because of the evolutionary nature of systems (or the inability of minds to visualize and describe a whole system), the structure must be reworked again and again until the optimum system is developed. Although the tools for describing machine efforts are being simplified rapidly, there will continue to be a great amount of tedious detail and program description that we do not have to contend with in an unautomated system.

The machine will do precisely that which it has been told to do

A further characteristic of information systems is that they are not adaptable to rapid change. Because of the high personnel costs and the length of time normally involved in programing or reprograming complex systems, they must necessarily be "frozen" for long periods so that they can be amortized. In this regard, electronic computers are frequently charged with being inflexible and fixed in nature. This is false. Only the program of machine instructions, conceived and written by man, is fixed and difficult to change. A computer can only follow man's instructions; it does not act on its own. This is in contrast to the human brain, which can change quickly because of its great capacity and flexibility.

We may generally state that complex computer systems are flexible in the design stage and inflexible once they are programed.

Elaborate Quality Control System

Automated systems are easily unbalanced by uncontrolled data errors and imperfect program logic. Unchecked errors have a tendency to propagate and unbalance the entire system. These errors in machine logic, systems logic and data are difficult to locate and to trace to their source. This is the reason for the elaborate system quality control checks that must be established at carefully engineered control points.

All organizational levels soon recognize that information elements, codes and data files must be standardized and fixed with exact precision to insure uninterrupted machine-to-machine and program-to-program communication in this rapidly evolving machine age.

Notwithstanding the limitations discussed, automated information systems can encompass and consolidate many traditional business functions into one single integrated process. As I have implied, such systems are usually very complex and difficult for man to conceive in their entirety. Frequently they may cover functional systems associated with several professions. For example, an inventory control problem may evolve into a combination of accounting, supply, funding and contracting type applications. In such an instance, the marks of these professions, their languages, are not common. This causes semantic problems, errors in communications, and great difficulty in choosing from several alternatives.

One of the important obvious benefits of the integrated system is that it serves the needs of more than one functional group by working from one common set of records for any given set of data, rather than having duplicate files in each department for similar information. For example, one inventory record integrated with accounting data and delivery schedules can provide for production scheduling, reordering, payment, cataloging and other purposes. Normally, similar data—perhaps in quantity and dollar terms on different records—are duplicated numerous times within a given organization. I must repeat, however: The time required for development and change is longer for integrated systems, and they are more difficult

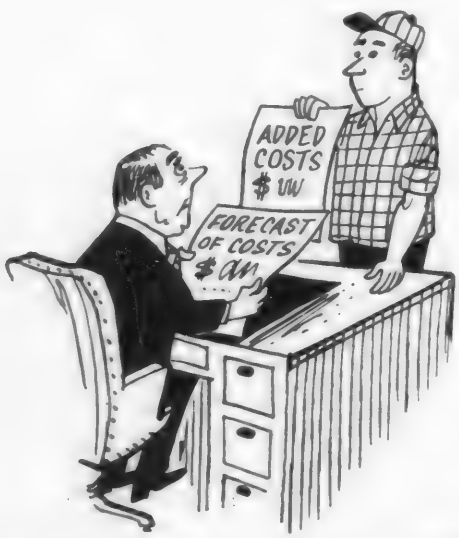
to conceive, analyze and document using present techniques.

One caution should be observed in these and other systems. There is a tendency to automate for automation's sake. It is not economically feasible to automate some actions at all. I believe it is this great difference of sharply increased capabilities on the one hand and the limitations of machines and techniques on the other that have led to the many misunderstandings and false prognostications of the effects of these new revolutionary movements in business. Automation has almost unlimited possibilities, but only "almost." It is not a panacea.

From the above rather frightening portrayal of the more significant characteristics of computer systems, you can see that their development and application frequently require a composite of our present-day specialized professional skills. This usually results in a team effort of such personnel as accountants, mathematicians and other subject-matter experts along with professional engineers and technicians, machine programers and operators. The leader of such an effort must exhibit the outstanding trait of a professional manager, that of a true generalist with enough understanding of the various problem segments to select the best from all contributors and weld the elements into an integrated, functioning whole. As yet there is a dearth of this type of professional person, and the majority of those who are available are computer-oriented. This is one of the major areas that we hope generalized education will assist us to overcome.

For what they may be worth, here are some opinions that stem from what I consider to be practical aspects of a difficult problem.

The introduction of new information systems is more difficult and more costly than is generally recognized. This is not an absolute, of course, because it is possible to make a precise determination of complexities and costs. I indicated at the outset, however, that communication on this subject is not easy, since we do not have a precise vocabulary; we therefore hear what we want to hear and interpret facts as we would like them to be interpreted. Further, it would be naive to hope that a salesman will not emphasize the positive and minimize the negative in selling his product. Once committed, we have great powers of rationalization, and only the toughest minds will acknowledge all the problems as they appear. For these principal reasons, experience teaches that systems are generally more costly and more difficult to put into operation than they are forecast to be.



Systems are generally more costly and more difficult to put into operation than they are forecast to be

Second, the technical advances in hardware have far outrun management's capacity to *use* equipment. We know how to integrate information systems from the computer's point of view, but we don't know as much about planning an organization to take advantage of our technical capabilities. The people of an organization in the end make it operate, and we cannot predict their reactions to new environments.

Third, there is a tendency to overautomate, once the decision to make the plunge has been affirmed. Having finally determined that automation is essential and profitable, there is a great urge to go too fast too soon, with consequent chaotic results.

Fourth, frequently there are no evident direct savings in personnel, despite the fact that this is one of the prime sales arguments. Instead, an increase in personnel may have been avoided, or present personnel may accomplish more. These are valid benefits, but it is sometimes difficult to associate them directly with the results of automation.

What Are the Prospects?

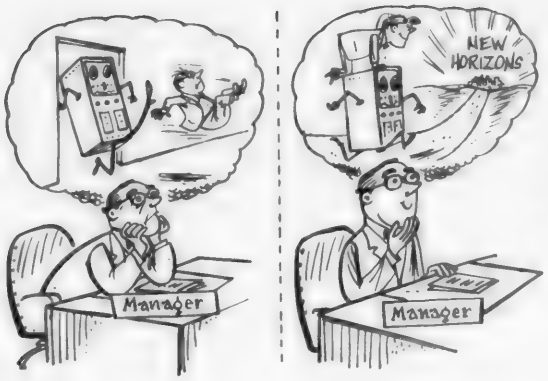
What, then, do we in American business have to fear—and to hope for—in this age of automated information systems?

Unless top managers are trained and experienced in modern data-processing techniques and information systems, their fear should be that they will be victims of forces they do not understand and cannot control.

Let me describe briefly the dilemma that top managers face—whether they are in a large, a medium or a small-size organization—if they do not master some of the technical aspects of the modern science of data processing. They have these three unacceptable choices: First, they may be oversold by the glittering promises of over-enthusiastic marketers of equipment, systems or services. This can be, and most likely will be, very expensive. Second, they may be overly suspicious of any promises, even conservative ones, and fail to move at all. They may find, too late, that competitors have moved out ahead and they have lost by default. Third, they may move in the right direction, but because they do not understand the technical capabilities or limitations of data processing techniques, they fail to capitalize fully on the investment.

On the other hand, if the top executives have had proper training, they will know that there are available to them powerful tools of information processing that will extend control and effectiveness and pay rich rewards.

A second great fear that should press down on top management is that the organization has not been properly trained and conditioned for the changes that modern data-processing techniques and information systems will have



If the manager is ruled by fear of the loss of his job, he will resist the advent of a modern data-processing system . . . But if he will only open his eyes, he can see new fields that have never before been attainable

on the total operation of the organization. The uncertainties, suspicions and insecurity that may accompany their introduction can outweigh the benefits. Inadequate indoctrination can bring failure to an otherwise well-conceived plan.

The antidote to this, of course, is that the organization shall have been trained in great depth and that a receptive climate shall have been created before a new system is put into operation. Complete organizational training must be accomplished. It is seldom that top management will acknowledge this in advance and pay the costs of this training. But in the end it must be done, and if it is done at the proper time it will pay the greatest dividends.

From the point of view of the middle manager, his greatest fear is the loss of his job. He has heard that the computer is capable of making those decisions that are now his. He can see a reduction in the number of personnel that he supervises; loss of job status; loss of prestige. If these fears rule, he will of course do everything in his power to resist the advent of a modern data-processing system.

But if he will only open his eyes, he will see a picture quite the reverse. He can see the opening of new fields that have never before been attainable. He can see himself in a more responsible position, doing stimulating mental work—creative work—and having time to accomplish things that he cannot now do. He can see himself doing analyses for which he has never before had the time. He can see himself engaged in scientific forecasting and employing other scientific management practices that were never available to him and that he has not had the time to learn and understand.

From the worker's point of view, he fears dislocation, unemployment and insecurity. His great hope is to raise his level of action and level of participation in the business from clerical action to the decision level.

The sum of these hopes and fears presents to business educators at all levels the greatest problem with which they have ever been faced. They must become familiar with the fundamental nature of this new automation and management science movement; they must learn its characteristics and basic principles.

It may be necessary to revise the curricula of our schools to teach our youth these fundamentals early, in order to prepare them for their role of leadership in their new profession. For example, it would seem that a thorough grounding in mathematics should become an essential part of business curricula. In this regard, it has been suggested that we combine business, mathematics and engineering courses into a new management science course. I would not presume to offer the solution to this difficult educational problem; however, I know that, in leaving it with business educators, I leave it in good hands.

To approach this problem, many universities are installing computers to permit their engineering, mathematics and business schools to learn about this new technology first hand. These will provide excellent opportunities for teachers in large numbers to prepare properly for their teaching duties.

It seems that it should be taken for granted that business and management programs today recognize the vital role of information-processing techniques in modern business. But it cannot be taken for granted. I am astounded (and concerned) at the lack of emphasis on this subject. Some of the best—or most eminent—executive training programs of the country do not as yet recognize the vital forces at work in these revolutionary movements or their probable impacts.

Some time ago, one of our industrial leaders* made this forecast:

"When the history of our age is written, I think it will record three profoundly important technological developments: (1) nuclear energy, which tremendously increases the amount of energy available to do the world's work; (2) automation, which greatly increases man's ability to use the tools; and (3) computers, which multiply man's ability to do mental work. Some of our engineers believe that of these three, the computer will bring the greatest benefit to mankind."

Developments occurring now tend to confirm this judgment and seem to point to the area of business as the one in which the computer, combined with the management sciences and automation techniques, will realize its greatest service and its most revolutionary effects.

Certainly, if business educators and businessmen understand the nature of the problem they face and do something about it, the immeasurable benefits that *can* be achieved *will* be achieved in the shortest possible time.

* Ralph J. Cordiner, president of General Electric Co., before the Subcommittee on Economic Stabilization of the Joint Committee on the Economic Report, October 26, 1955.

trends in clerical employment

HELEN WOOD
Chief, Occupational Outlook & Specialized Personnel
Bureau of Labor Statistics, U.S. Department of Labor

AUTOMATION and its effect on employment are matters of urgent concern to the Department of Labor. This is evidenced by the recent establishment by Secretary Goldberg of a new Office of Automation and Manpower, with responsibility for studying the effects of technological change on employment and unemployment and for developing programs for expanding and improving testing, counseling, training and placement of workers displaced by automation and of new workers about to enter the labor market.

Exciting and portentous as are the new technological developments we call automation, it is important to see them in historical perspective—as the most recent in a long series of innovations that have affected office employment in revolutionary ways. While technological changes have been taking place, clerical employment has increased enormously in the United States. In 1910, only one in 20 workers was in a clerical occupation. By 1940, the proportion of clerical workers had risen to one in 10, and in 1950 it was one in 8 employed workers. Since then, clerical employment has grown more slowly, but it is still increasing faster than the work force as a whole. Today, clerical workers represent about one out of every seven workers in the country. They number about 10 million altogether—a greater number than are employed in any other category of occupations except semiskilled factory and other operative jobs.

In what kinds of work are these millions of clerical employees engaged? This is a fundamental question in assessing the probable impact of automation on employment in this field.

About one-fourth of all clerical workers (approximately 2½ million in 1960) are secretaries, stenographers or typists. Close to a million are bookkeepers. Several hundred thousand are office machine operators—some of them employed on the new types of electronic equipment but a much larger number engaged in operating the great variety of other office machines. Another very large group is made up of file clerks or general office clerks. In addition, the clerical work force includes telephone operators, mail carriers and a variety of other workers—some in jobs involving considerable responsibility (airline ticket agent, railroad station agent, bank teller, for example), others in unskilled and routine jobs often held by beginners (office boy or messenger, for instance).

It is obvious from this listing that some kinds of clerical workers will be affected little if at all by the new computers. In many areas of office work, however, automation and other technological innovations will unquestionably have an increasing impact on employment. The big question is: Will business expansion and the ever-mounting volume and increasing variety of paperwork continue to outweigh the depressing effects of technological change on office employment, as they have in the past?

Office automation is too young an infant to provide us with an assured answer to this question as yet. However, the forces making for expansion in our economy are very strong. Expansion will be especially marked in the kinds of business activities that use a large complement of office help. Although we cannot estimate the precise rate of growth in various industries, it seems clear that some will grow with special rapidity while others will lag.

The industries that provide services—including finance, insurance and real estate; trade; professional, recreational and business services; and government, particularly state and local—will have a more rapid employment growth than the basic production industries, as they did during the 1950's. Today, over half our employees are in industries other than agriculture, mining and manufacturing. These developments will mean a disproportionately large increase in office employment, because the trade and service industries use exceptionally large numbers of clerical workers.

In the great field of manufacturing, which employs far more people than any other major industry group, the over-all rate of increase in employment is expected to be about the same as in total employment (in the neighborhood of 20 per cent). Employment of office workers has been increasing in manufacturing, and a larger proportion of the employees on manufacturers' payrolls are white-collar workers than was true 20 years ago. This

Today, clerical workers represent about 1 out of every 7 workers in the country

trend, we anticipate, will continue in the 1960's, so that as manufacturing employment expands, a disproportionate share of the increase will be in the white-collar category.

What will these projected increases in industry employment mean in terms of demand for clerical workers? It is our present conclusion that clerical employment as a whole will continue to increase at a rate somewhat faster than that of the labor force as a whole during the 1960's. The detailed studies of the trends in different occupations made by the Bureau of Labor Statistics in connection with its occupational outlook program suggest an increase of about one-fourth in clerical employment between 1960 and 1970—roughly the same rate of increase as is projected for proprietors and managers as a group, for skilled workers and for service workers. Professional and technical personnel are the only occupational group expected to increase at a significantly faster rate (probably by as much as 40 per cent over the decade).

Factors expected to underlie the continued increase in clerical employment include the expected rapid expansion in trade, finance and other industries with large clerical forces already referred to, plus the constantly mounting volume of recordkeeping and other paperwork resulting from the ever-growing size and complexity of modern business organizations and present-day government.

Manufacturing will probably continue to be the largest employer of clerical workers, as of workers in general. The number of clerical employees on manufacturers' payrolls may rise by half a million or more over the decade. In wholesale and retail trade, however, the rise is expected to be even greater (some 800,000), and a large increase in clerical employment is expected also in service industries, with sizable though smaller increases in finance, insurance and real estate; in government (at least state and local); and in transportation and public utilities.

Altogether, these increases in the clerical work force may add up to over 2½ million, bringing the total number of clerical workers in the country to more than 12 million by 1970.

Need for Additional Workers

Furthermore, it is important to realize that these figures, big as they are, represent *net* increases in employment. They do not include any allowance for the new workers who will need to be recruited and trained to replace those who retire or leave their occupations for other reasons. Yet two out of three clerical workers are women. And the proportion of workers who have to be replaced every year is particularly high in occupations employing large numbers of women, who are likely to leave their jobs after a few years to take care of their families. In consequence, replacement needs are a continually large source of jobs for clerical employees, providing hundreds of thousands of openings of this kind each year.

This point should not be lost sight of in concern over the impact of automation or other innovations on clerical employment trends. It means that, even if clerical employment should decline—and we do not think it will over this decade—there will continue to be large numbers of openings in many of the big office occupations.

Even in this decade of automation, many young people will need to be trained for customary office jobs

Effect of Automation on Clerical Work

The generalizations I have been making are based in part on a study of the adjustments to the introduction of office automation conducted by the Bureau of Labor Statistics in 20 offices in private industry that had installed EDP systems at least a year before. I think you will be interested also in a few of the detailed findings of those studies.

One very important finding was that the groups of workers directly affected by the introduction of the EDP systems represented only about 5 per cent of total office employment in the organizations studied. Since the companies planned to apply the computers to other activities also, the proportion of office employees affected was expected to increase—but in all probability not, within the next few years at least, to an entirely different order of magnitude.

In the units directly affected by the computer, employment was reduced by about 25 per cent within one year after its installation. Most of the individual employees affected (a little over 80 per cent) were in jobs involving posting, checking and maintaining records, filing, calculating, or tabulating, keypunch and related machine operations. Most of the remainder were in administrative, supervisory and accounting work. It is significant that only 4 per cent were in the less routine clerical jobs such as correspondence, stenographic and secretarial work.

Despite the reduction in labor requirements for the tasks performed by the computers, there was a rise in total employment in the offices as a group. Over the four years from December, 1953, to December, 1957, total office employment at 17 of the offices studied increased an average of 7 per cent. This increase, however, was much less than the 15 per cent rise reported for clerical and kindred workers in the nation as a

whole during this period. In 6 of the 17 offices, the increase was greater than 15 per cent; in 7, less; and in 4 there was a decrease. It thus appears, as would be expected, that the immediate effect of electronic data processing was some retardation in the growth of office employment (particularly part-time work). However, the experience of some offices underlines the possibility of expanding employment in new areas of office activity to handle information that, without the computer, it had not been practicable to obtain.

Necessarily, some new positions were created to operate, program and manage EDP activities, but the number of these was small. An average of 29 persons were employed in each of the EDP units at the time of study. Close to 7 out of 10 of these persons were in programing and planning positions, about a quarter were engaged in operating the equipment and 8 per cent were in administrative and supervisory positions.

Little Change in Over-All Salary Structure

The introduction of electronic data processing raised the average grade of skill of the office workers only slightly in the organizations studied. Routine, low-paid jobs that became vacant during the transition period immediately after the computer was installed were eliminated, and as a result the higher-paid workers became a larger proportion of the total in the affected group. The classifications of EDP positions at the top of the office pay structure also tended to raise the average salary level. Since the newly created positions constituted a small proportion of total office employment, however, they had only a small effect on the salary structure of the offices as a whole.

In staffing the new positions connected with the computers, most of the workers (more than 80 per cent) were selected from within the same organizations. However, very few of those selected came from among the employees affected directly by the new installations. The workers hired from outside were primarily trainees, not experienced programers or computer operators. Most offices used standard tests of learning ability and numerical aptitude to screen applicants for the new positions but based their final selections on individual interviews and appraisals.

Young people will need broad training to give them the adaptability to meet changing employment conditions

Implications for Business Education

What does all this mean for business education? First it means, I think, that—even in this decade of automation and other technological marvels—you will need to go on training large numbers of young people for office jobs of customary types. Great numbers of secretaries and stenographers will continue to be needed, and so will a good many typists. A distinction needs to be made between these two groups, however, since people with stenographic skills are likely to have an increasing advantage over those trained only in typing.

A good deal has been said recently about the possibility of a machine that will turn dictation directly into finished manuscripts. If such a machine should become economically as well as technically feasible, the prediction I just made would certainly prove to be ill-founded. So far as I can judge, however, a practicable machine of this type is still a long way off. Just consider what a fantastically complicated computer program it would take to distinguish reliably between "bear" and "bare" and "waste" and "waist" in dictation—and how much fun the recipient of a letter would have if the machine made a mistake at this point!

With regard to the demand for typists' services, on the other hand, there is no question that this is being cut into by the increasing use of photographic reproduction devices of many kinds and to some extent also by the electronic computers. It is still too early to make an unqualified prediction as to the effect of these developments on the employment of typists. It seems unlikely, however, that within this decade they will do more than reduce the rate of growth in demand for typists.

Another office occupation for which it seems safe to predict increasing employment is that of keypunch operator. The demand for these workers has increased greatly in the last few years. Virtually every electronic computer system that processes business data uses punched cards as a means of input and output, even if it also uses tape. Furthermore, punched cards are being used to an increasing extent for other purposes—for example, in transmitting data over long distances through the new teleprocessing devices. It thus appears that, although employment of keypunch operators in connection with the old-style machine tabulation equipment may well diminish, this drop will be more than offset by the increasing demand for these workers in connection with new types of equipment.

In all probability, there will also continue to be a good many openings for operators of bookkeeping and other office machines in the great numbers of offices too small to have computers—for example, the local laundry or even your own school office. However, continual changes in the nature of the office machines can be expected—and business educators will be expected to provide students with the needed background on new developments.

Above all, it will be important to help young people interested in office work to get as good a general educa-

tion as possible, in addition to training them in specific office skills. In this decade, they will need to be trained more broadly and thoroughly than ever before, in order to give them the adaptability required to meet changing employment conditions. The number of EDP installations is certain to increase rapidly. As this happens, many clerical workers will have to qualify for new jobs, and they will need a broad background to assist them in this process. Furthermore, a good educational background will help them to qualify for the new, high-level jobs connected with the computers, as these become available.

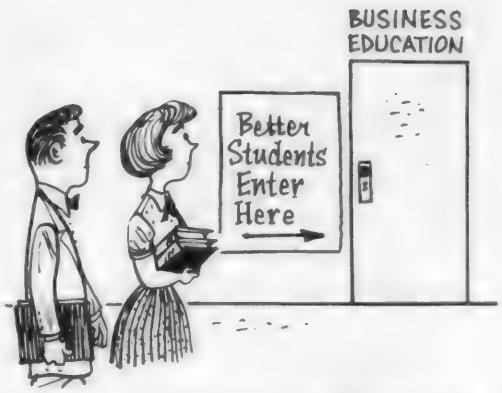
In conclusion, may I ask you to recall that a huge increase in the number of new workers is in the making. Altogether, we anticipate that approximately 26 million new workers will enter the labor market during the 1960's, compared with only about 19 million during the 1950's. Our expanding economy will provide openings for many of these young people. Nevertheless, stiff competition for jobs is likely to develop in many entry occupations, including the lower-level clerical jobs. This prospect underlines the need for good educational preparation of today's students, who will make up the oncoming force of new workers. The better an individual's education and training, the greater his chances of surmounting the competition and technological changes ahead and achieving a satisfactory work adjustment.

automation's challenge to business education

JOHN C. ROMAN
Supervisor of Business Education, Cincinnati, Ohio

TECHNOLOGICAL ADVANCES have posed a challenge to the nation's educators in the form of automated education. In the business world, the use of computers is becoming widespread. All of us have heard of the wonders of these machines in forecasting weather and the results of elections. On a smaller scale, computers are being made today to sell for under $1,000; they will be available to small as well as large businesses. These computers will be able to handle many of the mechanical chores now being performed by office workers.

The effect of automation that overshadows all others is the creation of a constantly changing world. No matter how certain some trends may appear at the moment, the rapid change that is taking place in technological development may alter the pattern. The present generation of adults is bewildered and confused by the many changes taking place. Many seem unable to cope with the shifts that are occurring in our basic institutions and values, and some try to resist any kind of change—to no avail.



It will be necessary to attract better students into the areas of business education

The primary task, then, is to prepare students for life in a changing world in which it is impossible to predict with any great degree of accuracy what the world will be like when they are adults. To do this requires that attention be given to the skills of problem-solving, research, leadership, self-discipline, self-direction and decision making. Modern society demands that students be encouraged to think *creatively*.

This does not mean that there should be no technical courses. There is a stronger need than ever before for students to be aware of the technical processes of modern society. Throughout their schooling, students should be constantly kept abreast of the vast technological world, through field trips, research and films. As they begin to reach a point where vocational preparation is important, students should be provided opportunities for actual work under supervision in offices. This will require closer cooperation with the business and industrial community. It will become increasingly important to emphasize broad understandings in the vocational subjects rather than to drill students into practices that will be outmoded by the time they are ready to enter their occupation. *It will also be necessary to attract better students into the areas of business education.*

The basic task of keeping abreast of new developments in society and keeping schools as nearly up to date as possible will be a major responsibility of the school administrator in the local situation. The process of rapid change will force the administrator to make wide use of lay and staff committees in formulating basic school policies, especially in the area of curriculum. The administrator who plans from the front office will not possibly be able to keep up with the rapid changes that society is undergoing, and his students will be the victims of his conceit or insecurity.

Communities will also have to give much more attention to the possibilities of new types of automatic equip-

Students should understand that school-acquired knowledge is not absolute but must be altered daily

ment that are becoming available to the schools. Too high a proportion of money is being spent at present on buildings rather than on equipment. Schools of the future must be more efficient if students are to receive enough education to cope with the business world. This may require the spending of a proportion of 75 per cent on school equipment as against the cost of the entire building. Although this proportion might seem quite high to some educators, it would seem quite commonplace to industrial leaders who are already doing this to increase the efficiency of their plants.

Machines can be built that can take over many of the routine tasks performed by teachers, thereby permitting teachers to spend more time in planning and in working with individual students. Machines could take attendance, drill students, grade papers and supply routine information to the students.

Automation is one of the most vital challenges that education has had to face. It will take the combined efforts of all citizens to meet this challenge by providing adequate education to meet the needs of the coming age. Failure to accomplish this task will be costly to the total well-being of the nation. Ford Robinson, vice-president of the Curtis Publishing Company, reported to EBTA in April, 1960, that, in order to prepare students for the business world that is driving toward automation, the teacher himself should (1) understand basic principles of automation, (2) know moderately well some of the applications, (3) have learned some techniques of reasoning and (4) abandon to some extent the teaching of knowledge (which can be memorized) and strive to educate minds to *think*.

Before the coming of automation, business students found that supposedly practical knowledge of equipment and techniques learned in schools was sadly lacking on a really practical level. Why?

Teaching should emphasize the understanding of basic principles and theories behind such skills and equipment. Teaching is not lecturing or telling things; teaching is devising a sequence of questions that enables students to become aware of generalizations by themselves.

For business students, many of whom plan to go to work immediately after high school, business education usually emphasizes such practical knowledges and skills as typewriting, shorthand, secretarial practice and bookkeeping. These are not obsolete skills; but they should be supplemented by the skills needed for automation, which require a different approach. For example, keypunching is a variation of typing and ten-key adding machine skill, but it requires a different emphasis. Precision and accuracy are vital. An error in typing can be caught early, but errors in keypunching can lead to a multiplication of the original single error.

At present, our schools are doing little in keypunch instruction, since they do not understand the need for keypunch operators and lack the money to acquire keypunch instructors. Students should understand that school-acquired knowledge is not absolute but must be altered daily.

Continued emphasis on the mastery of fundamentals is constantly urged. For men in the machine operation field, Peirce School of Business Administration in Philadelphia gives the IBM aptitude test plus the Otis test. Because industry requires that office automation and accounting be co-ordinated with management, there is a great need for high school students to prepare for such positions with good, solid bookkeeping courses. Also, handwritten information input for machines must be absolutely perfect; there is no place for uncertainty in the reading of figures or words. Philadelphia is well known for its leadership in developing a workable program of remedial instruction for legible handwriting in its secondary schools.

The subject of the entire March, 1960, issue of *American Child* (National Committee on Employment of Youth) is "Automation and Youth." The editorial in this issue of the magazine states that "there is unanimous opinion that almost every job opened by automation will demand more education and training."

A May, 1961, release regarding *Guide to Better Schools: Focus on Change*, by Trump and Baynham (appointed by the National Association of Secondary School Principals and the Ford Foundation) makes three observations about education and technology:

> Although technological advances are made by educated people, education makes relatively little use of advances.
>
> Where technology is used in schools, it is usually used to embellish established programs rather than as planned parts of those programs.
>
> In using technological facilities, education has most often modified or adapted those designed for other occupations rather than created designs specifically for educational purposes.

Technology can be used to do many things for education. It can begin in the administrative offices, with the working out of flexible programs. In classrooms and labs, it can help with the task of introducing concepts, communicating new ideas and keeping instruction abreast of the times.

As Socrates said many years ago, "He is not only idle who does nothing but he is idle who might be better employed."

EARL WEBER instructs a keypunch class at Edison Technical School in Seattle

data processing comes to public education

How one school has solved the problems involved in setting up courses

WILLIAM K. TOOMEY
Edison Technical School, Seattle, Wash.

BUSINESS, industry, government and public education have been devoting more and more discussion and investigation to the matter of using data processing as a method of eliminating much of the routine work in offices. During the past fifteen years, great strides have been taken to make these machines faster and more efficient in many new phases of office use. Now the biggest stumbling block is not the hardware, but the people to understand and use these machines to achieve maximum productivity.

About two years ago the Seattle branch of the Machine Accountants Association approached the Seattle Public Schools and proposed establishment of an educational unit to develop well-trained people on various types of data processing equipment. A thorough investigation disclosed a constantly growing need for such people in all phases of business and industry in the Seattle area. It was decided to add a new section to the business department at Edison Technical School —the adult education school of the Seattle school system—in order to fill this need. This decision resulted in the formation of one of the largest public school centers for education in the use of data processing machinery in the United States, if not the largest. With this new center also came many unforeseen problems.

In order to establish public education in this field, it was necessary to formulate a new approach to the problem of training people on data processing machines, departing from prior developments in this field. This was not intended as a criticism of established techniques. The manufacturers of data processing equipment, in order to sell their machines, had to resort to training people from interested businesses and industries. The manufacturer would take employees off the job and, in the shortest time possible, familiarize them with the machines to the point of usefulness in their own business.

The trend of education in the data processing machines field resembles closely the history of the teaching of

typewriting. In the early years, the typewriter companies were the exclusive teachers for men and women who wanted to learn to type, because this approach enabled the companies to sell the equipment. Some years later, private business colleges took over much of this training. Still later, the public education systems began to teach typing and were instrumental in bringing it to the status it enjoys today.

Similarly, for years manufacturers trained all operators in the data processing field. More recently, private schools have taken over part of this training; and now, at Edison Technical School, an effort has been made to pave the way for public schools to make such training more generally available.

In order to do this, it was necessary to arrive at a program that would justify public school participation. The instruction had to be on the same level and of the same quality as that of any other course. Therefore, instead of a concentrated familiarization type of course, it was decided that the day school program would offer a one-hour-a-day, five-day-a-week class, just as if a student were taking French, chemistry, accounting or shorthand. In this way, students were expected not only to familiarize themselves with what the machines were doing, but to understand the how and why of machine operation as well. At the same time, these students were urged to take other courses to prepare themselves as well-rounded prospective business employees. The data processing course itself was planned in a manner to assure that a student who completed it would be fully employable as a trainee.

Machines to Be Used

In deciding on the type of machines necessary for this instruction, we had to take two things into consideration:

1. What type of instruction, on what type of machine, was most urgently needed in the Seattle area.
2. How much would these machines cost, and would the cost be justified in a public school.

The first problem to be settled was whether the machines should be rented or purchased. After considerable investigation, it was decided that, for a public school, the rental system was the only feasible solution, for two reasons: (a) The machines were so expensive that the capital outlay for a school district was prohibitive; (b) Since the machines were technical in nature, a specialist was required to repair them.

As for the machines themselves, we decided after some experimentation that one room would be devoted mainly to key punch machines, including ten of the IBM Model 024 and two of the IBM Model 026 key punch. (One of the Model 026 machines also had an alternate program attachment.) In addition, the room contained one verifier and one Remington No. 305 key punch. The students in the key punch room also had access to a sorter for checking of work and for familiarization with the machine.

A second machines room contained an IBM 402 accounting machine, an IBM 514 reproducing punch, an IBM 077 collator, an IBM 082 sorter and a Remington 320 sorter.

Our business advisers and teachers felt that, with these machines, a satisfactory well-rounded course could be developed.

Operation of the Program

In order to understand the operation of the course, it is necessary to know how the two divisions of Edison Technical School function.

Edison has a day school program that runs six hours a day from 8:00 a.m. to 2:40 p.m., and an evening school that, for data processing students, meets for two and one-half hours twice a week, on either a Monday-Wednesday or a Tuesday-Thursday schedule. The evening course was set up with two sessions each evening, one class running from 5:00 to 7:30 p.m., and the other from 7:30 to 10:00 p.m. This enabled the school to offer four classes in machine accounting or wiring and four classes in key punch a week during the evening school program, in addition to hourly classes in the day school program. The course of study, type of instruction, textbooks and standards were to be the same in both the day and evening programs.

Acquiring proper instructors for this technical program presented some problems. In the evening school program, it was decided to use supervisors from the various data processing and key punch centers in Seattle. The day school program was required by law to use state-certified teachers. This meant that teachers in the business department would have to learn the technical subject matter of data

(*Continued on page 32*)

LEFT: Margaret Wise instructs students in the operation of a keypunch machine. **RIGHT:** William Fotheringham supervises students who are inserting a control panel into an IBM 402 accounting machine.

EDISON'S COURSE OUTLINES FOR KEY PUNCH OPERATION AND MACHINE ACCOUNTING

KEY PUNCH I

Recommended Size of Class: 14 to 24 students.

Prerequisites: Pass card punch vocational aptitude test; have minimum typing speed of 40 wam.

Length of Course: Day Program—1 hour a day, 5 days a week, 12-week quarter. Evening Program—2½ hours a day, 2 days a week, 12-week quarter.

Fee for Quarter: $30.

Curriculum: Parts of machine; proficiency on numeric material; proficiency on alphabetic material; basic knowledge and use of program drum.

Machines Used: 10 IBM 024 key punches; 1 IBM 026 printing key punch; 1 IBM 026 printing key punch with alternate program; 1 IBM 056 verifier; 1 Remington 305 key punch.

Text Materials: Manual of operation for the IBM 124 Card Punch and 026 Printing Card Punch.

Supplementary Materials: Keyboard exercises for card punch machines; card punch practice exercises; payroll summary and sales invoices.

Standards: Key punch tests should be at least one half-hour in length; standards shown are based on hourly rates.

Grade	Rate per hour	Errors
A	9,000 and up	0-2
B	7,501-8,999	3-5
C	4,501-7,500	6-10
D	3,000-4,500	11-15
E	Under 3,000	Over 15

KEY PUNCH II

Recommended Size of Class: 14 to 24 students.

Prerequisite: Key Punch I.

Length of Course: Same as for Key Punch I.

Fee for Quarter: $30.

Curriculum: Speed and accuracy proficiency; complete knowledge of drum cards; proficiency on alternate program key punch and verifier; knowledge of sorting.

Machines Used: Same as for Key Punch I.

Text Materials: Same as for Key Punch I.

Supplementary Materials: Same as for Key Punch I.

Standards: Key punch tests should be at least one half-hour in length; standards shown are based on hourly rates.

Grade	Rate per hour	Errors
A	11,000 and over	0-2
B	10,000-10,999	3-5
C	8,000-9,999	6-8
D	7,000-7,999	9-12
E	Less than 7,000	Over 12

MACHINE ACCOUNTING I

Recommended Size of Class: 15 to 20 students.

Prerequisite: Pass card punch vocational aptitude test. (Recommended — Accounting I, Bus. Arithmetic, Typing.)

Length of Course: Day Program—1 hour a day, 5 days a week, 12 weeks. Evening Program—2½ hours a day, 2 days a week, 12 weeks.

Fee for Quarter: $30.

Curriculum: Wiring principles of accounting machines; use of reproducing punches, collators, interpreters, sorters.

Machines Used: 1 IBM 402 accounting machine; 1 IBM 082 sorter; 1 Remington Rand 320 sorter; 1 IBM 514 reproducing punch; 1 IBM 077 collator.

Text Materials: Functional Wiring Principles; Manual of Operation for 402-403-419 Accounting Machines; Manual of Operation for 513-514 Reproducing Punches.

Supplementary Materials: Manual for 85-87 Collators; Manual for 557 Alphabetic Interpreter; Operating Instructions for Model 2 Automatic Sorter.

Standards: Student must have a thorough knowledge of the following concepts: (1) all phases of printing; (2) programing control; (3) adding and subtracting; (4) selectors; (5) total transfer and systems of lacing counters; (6) cross-footing; (7) field and class selection; (8) group indication; (9) reproducing and gang punching on reproducing punches.

MACHINE ACCOUNTING II

Recommended Size of Class: 15 to 20 students.

Prerequisite: Machine Accounting I.

Length of Course: Same as for Machine Accounting I.

Fee for Quarter: $30.

Curriculum: Advanced machine accounting problems; carriage tape control; summary punch and all phases of reproducing punch; standard operations for collator; introduction of interpreter.

Machines Used: Same as for Machine Accounting I.

Text Materials: Manual of Operation for 402-403-419 accounting machines; 85-87 collators; 513-514 reproducing punches; 557 alphabetic interpreter.

Supplementary Materials: Operator's Guide Functional Wiring Principles; Operating Instructions for Model 2 Automatic Sorter.

Standards: Student must have a thorough knowledge of the following concepts: (1) tape carriage control; (2) summary punch; (3) interspersed gang punching; (4) offset gang punching; (5) field-selected reproducing; (6) combined reproducing and gang punching; (7) selection reproducing; (8) operating principles of collator; (9) operating principles of interpreter; (10) sequence; (11) blank column detection; (12) basic set-up switches.

MACHINE ACCOUNTING III

Recommended Size of Class: 15 to 20 students.

Prerequisites: Machine Accounting I and II.

Length of Course: Same as for Machine Accounting I and II.

Fee for Quarter: $30.

Curriculum: Use of IBM 403 and 407 accounting machines; review of operations of reproducer, collator, interpreter; programing; card procedure; introduction to IBM 602 Series.

Machines Used: Same as for Machine Accounting I and II.

Text Materials: Same as for Machine Accounting I and II, plus Manual of Operation for 407 accounting machine and for 602 calculator.

Supplementary Materials: Same as for Machine Accounting II.

Standards: Student must have a thorough knowledge of the following concepts: (1) multiple line print on 403; (2) operation of 407 accounting machine, including normal printing, tape carriage control, multiple line reading, arithmetic operation, program control and multiplication, selectors, storage and summary punching; (3) interpreter concepts, including normal printing, suppress printing, presensing, repeat printing, selection, selective stacking selective line printing; (4) operation of reproducing punch and summary punch; (5) typical operations of collator; (6) data processing business procedures and programing.

Students Enjoy Learning When They Play "SWAP"

Looking for a game that tests subject matter knowledge with questions and answers? You'll like this one.

RUTHETTA KRAUSE, Indiana State College, Terre Haute

BY PLAYING a game we call "Swap," my students get a good review of subject matter and at the same time have some fun. The game is simple to explain and to score; and very little time is taken for extraneous details, as should be the case with any good teaching device. It can be used in any class in which subject matter is to be tested by questions and answers. We originated the game for a duplicating class as a way of emphasizing that, in addition to proficiency in actual machine operation, students should have certain information about supplies and procedures.

To play the game, you need a supply of objective-type questions covering the material to be reviewed. The teacher may prefer to prepare the questions himself. In the case of college students, however, they might well be assigned to prepare a specified number of questions dealing with certain areas of subject matter. After all, it is desirable for prospective teachers to have some practice in formulating test questions; and if students occasionally are called on to answer some of the ambiguous, poorly stated questions that other students have formulated, they have a greater respect for the care that must go into the preparation of good test questions. One example of the kind of "prize" question that my students have concocted was, "A stencil may be . . . . . , ... or . . . . . ." Another was: "The . . . . . should be . . . . . ." I often use these as examples and ask students how they would like to be confronted by such questions on tests.

Each question is to be typed on a 5 by 3 index card. If a question is based on material in a textbook or reference work, the title of the book and the page reference for the answer are to be written at the bottom of the card. If cards are prepared by students, a separate answer sheet is to be submitted with the cards, and each card is to be numbered and identified with the student's name and initials. The teacher will want to examine the questions before using them in class and eliminate the ones that are obviously unsuitable. If you consider it preferable to let the students see examples of the poor questions, leave the cards in but mark them "omit" (meaning that those questions are not to be used in the game).

When you are ready to play the game, divide the class into two opposing teams. (We call one the Blues and the other the Whites—our school colors.) The teams should have an equal number of players. If you have one extra, let him be scorekeeper. Shuffle the question cards, then let a student cut the cards. Deal six to each player—or fewer if you wish.

A word about scoring: Each correct answer counts one point. We have each individual keep his own score and the scorekeeper keep the teams' scores, but you may wish to keep a record only of team scores. A question calling for multiple answers carries multiple points, but *all* parts of the answer must be correct or no credit is earned for any part of it. It is fun to have a few multiple-answer questions scattered throughout—speculation as to whether anyone will find any of these cards in his hand lends an added element of chance to the game.

How to Play

To start off, Blue Player No. 1 reads a question aloud from any card he holds and answers it. Then he lays his cards face down and is handed a card by White Player No. 1 that he is to answer. (It will be obvious to the "smart" player that he should answer questions he considers easy and hand out the difficult ones.)

An answer given may be challenged by any member of the opposing team (except for the person who wrote the question); and if the challenger can answer correctly, he earns the points. If he challenges an answer that was *correct*, he forfeits that number of points from the score he has already earned (and from his team's score, of course). If each student tallies his individual score in chalk on the desk in front of him, it is simple and quick to add or deduct.

Next, the same procedure is repeated, with White Player No. 1 answering a question from his hand, then one given him by Blue Player No. 1. Then Blue No. 2 answers one from his hand and accepts one from White No. 2 to answer.

The used cards are placed on the desk, face up, as discards. After playing perhaps three rounds, deal three new cards to each player to replenish his supply and give greater variety from which to choose.

If you would like some ready-made questions, a starter toward preparing a deck on duplicating appears on the opposite page.

TYPICAL QUESTIONS FOR A "SWAP" QUIZ ON DUPLICATING

TRUE-FALSE

1. When using a lettering guide with a stencil, it is best to try to make each line with a single stroke of the stylus.

2. In the fluid process, papers of high absorbency produce the greatest number of copies.

3. Correction fluid for stencils is essentially stencil coating in liquid form.

4. In preparing a stencil for a postal card, the copy should be placed in the upper left corner of the stencil.

5. In fluid duplicating, multicolor work can be done on a single master.

6. Excess fluid will shorten the life of the master.

7. The flexible writing plate may be used with either side up.

8. A stencil cushion sheet may be used instead of a flexible writing plate when working with a stencil on the Mimeoscope.

9. Corrections cannot be made on a stencil after the first run.

10. For best results when working with hook styli, always move the stylus away from an angle.

11. The ink pad must always be changed for a two-color job on the Mimeograph.

12. Cement that touches a drawn or typed area on a stencil causes no harm.

13. The color of the stencil is of no significance in doing Mimeograph work, either typewritten or on the Mimeoscope.

14. A hole in a spirit-duplicator master is of no significance in an area where no copy is involved.

MULTIPLE CHOICE

15. A wheel stylus should be held in a vertical position with the wheel parallel to the T-square and (*a*) next to it, (*b*) away from it, (*c*) either next to it or away from it -it makes no difference.

16. After the opening is cut, an inset "patch" is placed (*a*) on top of the big stencil sheet, (*b*) under the big stencil sheet, (*c*) in the opening of exactly the same size so there is no overlapping with the big stencil sheet.

17. As a rule, when running copy on two sides of impression paper (Mimeograph), it is recommended that the weight of the paper used be at least (*a*) 20 lbs., (*b*) 24 lbs., (*c*) 28 lbs.

18. For any machine with automatic feed, it is preferable that the grain of the paper run (*a*) lengthwise, (*b*) crosswise, (*c*) either way—it makes no difference.

19. The (*a*) wire loop, (*b*) ball point, (*c*) roll point (signature) stylus is recommended for most tracing.

20. When drawing on a master, it is best to use (*a*) a ball-point pen, (*b*) a stylus, (*c*) a fountain pen.

21. On the Mimeograph, the two pieces of curved metal that extend under the cylinder on each side of the impression roller are called (*a*) clamps, (*b*) strippers, (*c*) breakers.

22. Paper should be fed into the liquid duplicator with the watermark turned (*a*) down, (*b*) up, (*c*) down or up—it makes no difference.

COMPLETION

23. What color dye lends itself most readily to the fluid process? .....

24. ..... is the name given to the deposit of ink that is transferred from one copy to the copy that falls onto it in the receiving tray of the Mimeograph.

25. What kind of dye is contained in the coating of the carbon paper used to prepare a master for a liquid duplicator? .....

26. On the Mimeograph, the strippers should be set ..... inch from the edges of the impression roller.

27. How long should correction fluid be allowed to dry before typing over it? .....

28. Give one of several possible causes for "bleed through" in liquid duplication. .....

29. When heavy lines or small solid areas are to be shaded on a stencil, ... may be used instead of a shading plate or screen.

30. Narrow paper is fed from the ..... side of the feed table.

MULTIPLE-ANSWER COMPLETION

31. Name three of the five elements needed in the fluid duplicator process.

32. For duplicated ruled forms, ... lines are recommended for secondary lines and ..... lines for borders and divisions.

33. List three ingredients of the carbon coating of fluid process carbons.

34. What are three ways of making corrections on a master?

35. Give two other terms that mean the same as liquid duplicating.

ANSWERS TO "SWAP" QUESTIONS

TRUE-FALSE: 1. False. 2. True. 3. True. 4. False. 5. True. 6. True. 7. True. 8. False. 9. False. 10. False. 11. False 12. False. 13. False. 14. True.

MULTIPLE CHOICE: 15. a. 16. a. 17. b. 18. a. 19. a. 20. a. 21. b. 22. b.

COMPLETION: 23. purple. 24. offset *or* setoff. 25. aniline. 26. ¼. 27. approximately 15 seconds. 28. *Any of these:* copy paper too thin, too much fluid, copies not dry before rerun. 29. silk sheet. 30. left.

MULTIPLE-ANSWER COMPLETION: 31. *Any three of these:* the master, special carbon paper, duplicating fluid, copy paper, the fluid duplicator. 32. broken or dotted; solid. 33. aniline dye, oils, wax. 34. *Any three of these:* scraping off the error with a blade, coating over or covering the error by using a correction pencil, using correction tape over the error, cutting out the error if nothing need appear in its place, covering the error with gummed tape if nothing need appear in its place, erasing. (Note: the disadvantages of this last method should be pointed out to the students.) 35. *Any of these:* fluid, chemical, spirit, direct process.

Make Your Students Catalog Customers

CAROLINE BECKNER
Casey Junior High School, Boulder, Colo.

YOU CAN SPEND a week or a whole semester using a mail order catalog as your text in a business class, depending upon your time, your vision and your need for class motivation.

For my ninth-grade business class I put out a call for 28 Sears Roebuck catalogs. After polling teachers, calling parents and searching through Sears' customer list, the request paid off (and they're still bringing in catalogs—40 to date).

It didn't really matter when the thick books were accumulated because they could be used for practical application with any unit in the text. However, we began with budgets. Each student was to decide what job he supposedly had in the $4,000-$6,000 bracket, the number in his famly and the amount he could expect to use for furnishing a house. It was decided that each would have savings of $800 to begin his spending spree. (As they progressed, they saw that this was vital.) After making out a monthly budget plan, they were given a floor plan of a modest house and told to furnish it by ordering from their catalogs.

The catalogs were motivation enough, but each student had the pleasure of choosing colored pictures of his house that were either brought by him from home or selected from a group supplied by me. Visualization of their houses was part of the fun and it was also a good chance to discuss the cost of houses in the area, based on newspaper real estate ads.

Beware of turning the class loose to furnish their houses in any order they want. It is too big a project and they weary of it before they have barely organized their needs. It is much better to break the work down into daily assignments, such as: Monday, furnish one bedroom; select drapes, floor covering (throw rugs), beds, dressers, lamps, a chair or two.

After locating these items in their catalogs they must write them down on the order blanks, listing numbers and prices. Before the end of the period they total their purchases for the day (thus using mathematics casually), write out a check for the total amount and turn it all in to the teacher. (Checks can usually be obtained from local banks.)

Tuesday, designate how much they should buy for another room. Whenever some students finish before others do, provide them with an "extras" list, including such items as bed clothing, linens or kitchen utensils.

Every day students are amazed at the cost of various items. They begin to wonder how their budgets will hold up, whether they can afford the more expensive furniture they want or the luxury of certain fabrics.

If you assume the house already has a furnace, kitchen appliances and bath fixtures, spend some time one day discussing the cost of these just for their information, showing them in the catalog how the prices range.

Depending on how long you wish them to continue on this unit, you can also have your students figure the insurance on their household goods, plus insurance on the whole house. At the end of the project, let them reconcile their bank statements by having the teacher keep out a few checks as outstanding.

Related Materials

You can break the catalog routine but still keep the connection by discussing Vance Packard's attitude toward advertising in *The Hidden Persuaders* (available in paperback). You could also use a pamphlet by the Housing and Home Finance Agency, *When You Buy a Home* (10 cents, Superintendent of Documents, Washington 25, D.C., Catalog No. HH 1.2:H 75). Or collect information from local building and finance associations. Installment buying can be covered at length. The legal aspects involved in purchasing a house can be compared with renting. Or the whole process of consumer buying, filling out sales slips or comparing grocery prices can serve as an introduction or sideline to this unit. Trying to balance their budgets at the end will impress on the students the need to know what is happening to their incomes.

As mentioned before, the project can be expanded or condensed as desired; but, best of all, it's practical and students gain a better understanding than by reading and answering questions from the text.

Effective Teaching Techniques For General Business

I. DAVID SATLOW New York University

2. MOTIVATING LEARNING THROUGH PROBLEM SITUATIONS

THE SKILLFUL teacher can utilize problem situations in every phase of the lesson. Whether it's a question of creating a need for learning an entire unit or only one lesson within the unit or a question of presenting new information or providing practice materials to reinforce the learning of the new topic, problem situations are an effective means for realizing our instructional goals.

The foregoing generalization applies to the entire area of general business; it can truly be said that the degree to which the classroom teacher avails himself of problem situations is an index of the degree to which he arouses and maintains student interest.

How does the teacher who believes in the problem approach handle the evolution of the work in his class? In the first place, he does not announce the topic of the day. Instead, he presents a problem situation to his class as a springboard for their discussion that sets the stage for the work of the day.

For example, in introducing the unit on savings, some teachers announce, "Today we are going to take up a topic that is very important to all of us—that is, the question of saving." The adherent of the problem approach, on the other hand, does nothing of the sort; he believes that his insisting that a topic is important does not register with the class. After all, they consider him a prejudiced witness to whom all topics in general business are important. Instead, he starts the lesson with a very brief problem, such as the following: "Your mother had a birthday last month and you wanted to buy her a present, but unfortunately your expenses for

the month were so high that you simply did not have enough money left for the gift. How could you have spared yourself the embarrassment and your mother the disappointment?"

It needn't be Mother; a friend can be substituted. It needn't be a birthday present; some other need for money can be substituted. The main point to be served by the problem used is the desirability of setting aside money systematically well in advance of the date it will be needed, and any problem situation with human interest that will make this need manifest will serve the purpose of motivating the study of the new topic.

The topic of bank statement reconciliation can be brought closer to the students by this simple problem situation: "Your mother's checkbook shows a balance of $214.27, yet the bank statement arrives, indicating a balance of $318.40. Who is correct—Mother or the bank? How big a check can Mother write without having it bounce?" A lively discussion is sure to follow. Moreover, when fortified with several additional facts, the teacher can use this very problem for the preparation of an actual—and meaningful—bank statement reconciliation.

Illustrating Credit

The matter of credit can be brought close to the student by the problem situation that is faced by a classmate who has lost his lunch money. The discussion that follows, if steered properly, will invariably lead to consideration—or better still, to application—of the bases for extending credit. It is a short step to transfer from the basis for extending individual student credit to the basis for extending credit in the business world. Under such conditions, the "3 C's" of credit do not have to be given to the students; instead, they are deduced from the discussion that follows.

Another problem situation that might be employed in the teaching of credit is: "You are the owner of a small grocery store. One of your steady customers enters the store, makes her selection and, as she is about to pay for her purchase, discovers that her wallet has been stolen from her purse. She has no other money with which to pay for her purchase. What would you do?"

In the ensuing discussion, the class would be asking various questions of the teacher—questions that would shed light on the advisability of letting the customer have the goods on the strength of a mere promise to pay at a later date. In short, they would be going through the investigatory and decision-making phases of the work of the credit department of a modern business establishment. The wise teacher can easily point out to his class that all the weighing and considering that they went through in connection with the dilemma of the steady customer who is temporarily out of funds is illustrative of what a business firm does when it is confronted with an application for credit.

The topic of insurance might be introduced with this problem situation: "Mr. and Mrs. Albert Lorenz went out shopping. On their return, they noticed fire engines down the street. As they walked a bit further, they discovered that their home had burned down. What might Mr. Lorenz have done to protect himself against such a heavy loss?"

The meaning and function of a postal tracer register far more effectively through a problem situation than they do through the lecture method. "You mailed a package two weeks ago to Henry Smith, 123 Lincoln Drive, Chicago, but the package never arrived. What can you do at this point?" The topic of the postal tracer was purposely selected since it is obscure and minute, but sufficiently important to the student as a consumer to be worth treating—and sufficiently inportant to leave a lasting impression with the student when presented psychologically.

The study of the telephone can be motivated through the simple problem, "You're downtown shopping and cannot get home in time for supper. What would you do to prevent your family from worrying needlessly?" Instead of telling the class about person-to-person calls, the teacher might present the problem situation in which "You desire to contact your uncle in Chicago and do not wish to waste the cost of the call. What would you do in order to make certain that you reach him?"

For teaching the sending of money by telegram, this problem situation has been used with success: "Your brother is stranded out of town without funds. How can you get money to him immediately?"

The use of the classified directory can be motivated by presenting this problem: "A water pipe bursts at home and is in need of immediate repair. How would you locate a plumber?"

To teach the use of traveler's checks, the following problem situation might be employed: "You are about to go away on a one-month trip. How much money will you require?" The correctness of the answer is not so important as the thought that some acceptable medium of exchange is required. The answer will invariably lead to the posing of the problem, "You do not wish to carry large sums of money. Since you are unknown at the hotel (or in the place you will be visiting), no one will cash your check. How will you be able to manage financially?"

Many Applications

Problem materials need not be confined to the introducing of a new topic. They can be utilized most effectively in any other phase of the lesson. Drill or practice materials are more meaningful when presented in terms of problem situations. These brief problem situations focus the learning goals before the class: "Suppose you received a check with your name misspelled, what would you do?" "What would you do if you lost your paycheck?" "You are interested in buying a hi-fi record player. How would you go about deciding which make to get?" "You have an important document for mailing. How would you send it with the utmost assurance that it will not get lost in the mail?"

Even the arithmetic practice that we believe students should have in the general business class assumes meaningful proportions when presented by means of the problem approach. Instead of asking the class for the cost of mailing 83 letters at 4 cents each, the teacher makes the work more palatable when he employs the problem approach in this manner: "You were elected secretary of your junior high school's graduating class and are now faced with the problem of sending out a meeting notice. If there are 83 members in your group, how much money will be required to send out the meeting notice?"

Problem situations can also serve as vehicles for effective summarization at the end of the lesson. A limited number of examples will suffice.

At the close of the lesson on the purposes served by banks, one brief question, "What would happen if all the banks of our town were to shut down?" presents the problem to the students so vividly that they cannot help but point out in summary fashion the distinct value of banks to any community.

The various forms of credit can be elicited from the students and compared through the use of the following problem situation: "Your TV set is quite old; repair bills have been high lately, and results do not seem to justify any further investment in the set. You would therefore like to buy a new set, but you simply do not have enough money to pay for it in cash. What courses of action are open to you?" Having learned about credit, students are now in a position to compare the merits of buying on a charge account, buying on the installment plan, borrowing the money from a bank and buying the set for cash, and the several other methods that are possible.

By way of summary of insurance, the teacher can pose this problem to the class: "Henry Jones and his wife, Mary, are in their late twenties, have two children, and own their home and automobile. What insurance program would you recommend to them?" Of course, the teacher should be ready to supply additional information concerning the family income and financial obligations as these are requested by the students.

Instruction in savings and investments can be followed with a problem situation along the following lines: "Assume that a cousin of yours is married and in his early twenties. By careful management, he has saved $2,500. In what way might he invest this money?" The teacher can then vary the question by increasing the amount available for investment.

Comparison of various modes of travel can result from such a problem situation as: "Your family is planning to go off on a month's vacation next summer. What modes of travel might they use? Under what circumstances would each method be used?"

Insofar as possible, the problems presented should deal with named rather than nameless people and should refer to the local scene rather than nowhere or some distant place —unless the remote place is needed to provide a touch of realism to the problem.

SHORTHAND CORNER

RICHARD A. HOFFMANN
PLACER JOINT UNION HIGH SCHOOL, AUBURN, CALIF.

Are you short of ideas for bulletin-board displays? Check your professional magazines for free and inexpensive materials. Most of the large office supply companies and manufacturers have posters and other material they will furnish on request. Check with your school librarian; she should have some professional material on displays for libraries that you might adapt for your own use.

Several things should be considered for effective displays:

1. Have a central theme—school, community, history, business, forms, activities, steps of a task, finished work, etc.
2. Keep the display simple, uncluttered. It is better to have too little than too much.
3. Have an attractive, simple, arresting "catch" title.
4. Keep it well balanced.
5. Make it as colorful as possible.

You say you do not have time to take care of the bulletin boards. Why not ask for volunteers from your class, or make it an assignment for a team of two or three students? If you have students do it, let them decide on the theme and work out their own interpretations. And by all means, if you want them to do it, don't give them suggestions to change this or change that. It will discourage them and will dampen their initiative and enthusiasm. If you do it alone, you are boss; if you do it with helpers, you are boss; but if you ask students to do it, let them alone. You might want to have your class evaluate the result of student bulletin-board efforts; give them some cues such as attractiveness, appeal, attention-getting, etc.

Two months of the school year have gone by. What do you think of the students in your class? Did the counselors do a good job and give you all good students? Or are there some who shouldn't be in shorthand?

Are any of the counselors in your school former business education teachers who have been promoted (or demoted, depending on how you look at it, not considering salary)? If they are not, do they know anything about shorthand? Do they know anything about transcription? Has anybody bothered to tell them about the courses in the business education department?

Why not help them out? You don't have to do the work, or not all of it. In the past I have had my students, toward the end of the school year, write out the answers to the following questions: "What is Shorthand 1?" "What are the advantages of studying shorthand?" "What are the disadvantages?" I asked them to be realistic in their answers. They typed their answers (with their names on them) and made three carbons. I took one copy of each answer, stapled them in booklet form, made a cover and presented this information to the counselor. Now, when he is asked these questions, all that is necessary is to hand out this booklet and the inquiring student can read what his fellow students have said. Sometimes these answers alone will help the student decide about the course. The information is also very helpful to the counselors.

If you think you would like to try this next May for the following school year, make a note of it now; put it in your "idea" file.

Last year my beginning shorthand class got into the habit of writing a short greeting on the blackboard in shorthand before I arrived. At first I just said something in reply. Later, I began to write an answer in shorthand. The students' greetings reflected new words and theory learned during the semester. I could have ignored the daily messages from the class or even discouraged them. But I'm glad I didn't. They helped start the class in a relaxed atmosphere; they provided a pleasant learning situation that definitely benefited the students.

JANE F. WHITE CENTRAL WASHINGTON COLLEGE OF EDUCATION, ELLENSBURG

Bookkeeping charts. A manual, *Bookkeeping Procedure Diagrams,* contains 25 charts that are fully explained in an 8½ by 11 inch book. All the fundamental principles of accounting are illustrated. Teacher and school price is $2.45 a copy from the Karwood Company, P.O. Box 133, Milwaukee 13, Wisconsin.

Management publication. The proceedings of the 1958 annual conference of the Washington Chapter of the Society for the Advancement of Management are published by the W. E. Upjohn Institute for Employment Research, 709 South Westnedge Avenue, Kalamazoo, Michigan. The title of this publication is *Management in the Scientific Age.* Write for a list of the many publications of this institute.

AVA publications. The American Vocational Association has recently published a new series of bulletins: *Facts You Should Know:* About Distributive Education; About Relation of Vocational and Practical Arts Education to Economic Well-Being; About Vocational Education; About Gateway to Opportunity; About Occupational Distribution as a Factor in Educational Planning. Copies are 10 cents each. For a current list of all AVA publications, write to the association at 1010 Vermont Avenue, N.W., Washington 5, D.C.

Equipment catalog. One of the most complete catalogs of office equipment comes free from Horder's Inc., 231 South Jefferson Street, Chicago 6, Illinois. Horder's will also be glad to send free their handy manual, *Top Drawer Assistance for a Busy Lady,* which contains accepted usage in punctuation, capitalization and forms of address.

Civil Service. The following pamphlets from the U.S. Civil Service Commission will acquaint you and your students with the opportunities in Civil Service: *Summer Employment in Federal Agencies,* Pamphlet 45 (15 cents); *Working for the U.S.A.,* Pamphlet 4 (15 cents); *After College . . . What?* Pamphlet 1 (15 cents); *Federal Jobs Overseas,* Pamphlet 29 (10 cents). These are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Clerical practice. If you teach clerical or office practice or if you want to teach all your students good business habits, you will be interested in *Successful Devices in Teaching Clerical Practice,* by Jane F. White and Thadys J. Dewar. Clerical practice is the newest course in most high school business departments. What should it contain? How should it be taught? You will find the answers to these and many other questions in this manual. It has over 220 pages and more than 300 good teaching suggestions. Price is $2.50. Order a copy from J. Weston Walch, Publisher, Box 1075, Portland, Maine.

Bulletin boards. A new book, *Bulletin Boards and Display,* by Reino Randall and Edward C. Haines, both of Central Washington State College, gives many practical suggestions for preparing bulletin boards. It also contains a list of sources for supplies and an excellent bibliography. Order your copy for $3.75 from Davis Publications, Inc., 44 Portland Street, Worcester 8, Massachusetts.

Retailing filmstrip. A 10-minute sound color filmstrip, *Retailing, A Choice Career,* is designed to help high school students learn more about opportunities in retailing. It is available, for purchase only, for $35 from Committee on Careers in Retailing, 100 West 31 Street, New York 1, New York.

DATA PROCESSING

(*Continued from page 25*)

processing in order to carry on the program. As a result, six Edison teachers spent an entire summer with a data processing machine manufacturer, learning the basic workings of these machines. Since then, with the co-operation of manufacturers, the Machine Accountants Association and a great deal of study, they have added materially to their knowledge.

Once decisions had been reached on machines, teachers and approach, the next problem was to set up a curriculum and suitable course of study that would assure desired results.

All students interested in registering for this course were first encouraged to take a vocational aptitude test for either the card punch or machine accounting field. It was felt that such a test would give the student some basis for estimating his potential success; since ours is a public school, we felt that a student should have an honest appraisal of himself before he spent either time or money to learn this new field.

The only prerequisite to registration in either class was that the students who enrolled in the key punch sections had to be able to type at least 40 words a minute. We used a combination type of key punch machine that employed a type keyboard overlaid with an inverse 10-key machine board. The school felt that, in order for students to acquire sufficient skill in key punch work, it was necessary for them first to have mastered the skill of typewriting.

There were to be two types of classes in the course of study. First were the key punch classes, predominantly for women. (A number of men have enrolled, especially those who expect eventually to be supervisors or managers, in order to learn machine capabilities and what to expect of key punch operators.) This course was designed to be completed in two quarters or 24 weeks, either at the rate of one hour each day (in day school) or two and one-half hours a night twice a week (in evening school). At the end of this time, an average student should punch accurately eight to ten thousand punches an hour, and the superior student should do better than ten thousand.

In the machine accounting, wiring or tab operator's course, a student would be expected to spend three quarters under proper supervision to

gain a thorough knowledge of the field. At the end of this time, a student with an aptitude for the work would be educated to the highest degree that could be attained without practical experience.

At Edison Technical School we have come to the conclusion that, for a course in machine accounting with proper supplies and good instruction, ideal class size is between 15 and 20 students. In the elementary courses, an initial enrollment of 20 students in a class will reduce to about 15 by the end of the quarter, after the normal number of dropouts resulting from lack of interest, discouragement or other personal reasons. Over the past two years, key punch classes have served 12 to 20 students a class, depending on the number of machines on hand at a particular time. It is the school's belief that a good teacher can handle up to 24 students without a decrease in efficiency.

Approximately 185 students in key punch operation and another 164 in machine accounting have been graduated from Edison in the past two years. The demand for trained personnel in the Seattle area greatly exceeds the supply, especially in the key punch field. Any operator who has acquired high standards in speed and accuracy has encountered no problem in finding employment. It is more difficult to analyze employment of graduates in the machine accounting field. One reason is that many of the students enroll and complete the course without intending to seek employment. They feel it will be of future help in enabling them to work with accountants, secretaries and other people in data processing. A large number of machine accountants have been placed, however.

Anyone who is considering the establishment of classes in data processing would be wise to make a thorough investigation of textbooks and materials. Probably the greatest weakness in this field today is the lack of well-planned and well-written textbooks. Present textbooks are manuals from the manufacturers. They have been written by engineers as multipurpose manuals—for engineers, operators and repairmen—and as tests. As a result, their usefulness for instruction is limited. Also, until educators can properly construct educational tests in the field of data processing, growth in instruction will be slow.

(*Continued on next page*)

HELEN H. GREEN MICHIGAN STATE UNIVERSITY, EAST LANSING

A remark that a departing weekend guest made to our dog brought me up with a start and, oddly enough, set me thinking about teachers and students. Said the guest, as she administered a parting pat to our little part-beagle, part-terrier, part-*terror* Tiny, "You're a sweet little dog, Tiny. And a much better one than your owner gives you credit for being. You just have too much to live up to."

"Too much to live up to!" She was referring to the fact that Tiny is always being compared to and expected to *measure up to* our beloved Toby—the little dog who helped raise Pen and Jen from the time they were in second grade until they were in college. I guess we have never quite got used to the loss of Toby. Toby was *people*—Toby didn't know that she was any different from any other member of the family (unless perhaps she thought she came a cut or two above the girls in seniority of privileges). Toby had more nice qualities than many people, and fewer faults. Toby was faithful; she was loyal; she accepted people for what they were. Toby believed in people; she *liked* them! Toby was happy and cheerful. She laughed. She could fit her mood to yours with a sensitiveness that was amazing. Ah, Toby! Frankly, Tiny doesn't come up to Toby in any way except that she resembles her in looks. Perhaps that's why we brought her home from the Shelter when we went just to *look* at dogs—not to get one!

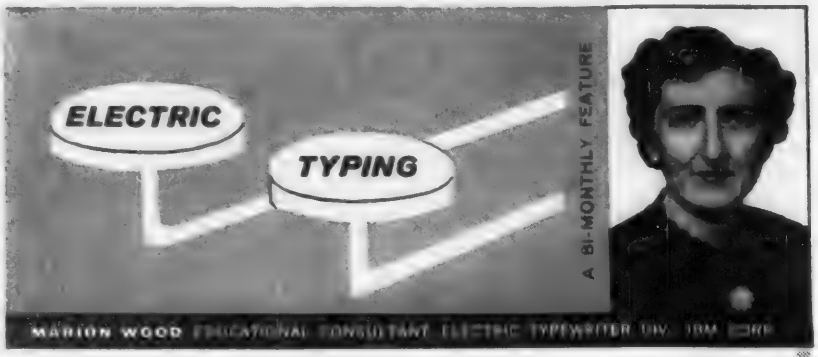
To be perfectly fair about it, Tiny is actually cuter-looking than Toby was. Tiny is about the zippiest-looking little mutt that ever ran around on tiny, bowed, sawed-off legs. She wears her tail curled up like a gallant sail over her back; and, though she is mostly beagle, she "tulips" her ears in an alert fashion. She looks like a gay, rakish, come-what-may sort of soul who makes you feel gay just to look at her. You naturally assume that you'll be great friends. Then she may bark fiercely, growl savagely, and/or take a very ungay, unfriendly nip out of you. She simply is never to be trusted. Even after you think you have reached a gentleman's agreement with her, she may sneak up from the rear for her pound of flesh. Someone must have given her a very bad time in her puppy days for her to have formed such a poor opinion of the human race.

Tiny is pure animal—and no amount of loving or petting or *humanizing* makes her anything but that. When she gets mad at one of us, she snarls and growls as if we were complete strangers. When we call her bluff, she goes off in a huff. Manners and obedience are not in her make-up.

But she is a good watchdog. And she has a passion for instigating play and romping that is riotous—albeit the play is always rough. We invariably call "Uncle" before she does. And she has a cute, officious way of doing something strictly "off limits" with a "So what can you do about it now" expression. But we expect her to be like Toby—a grave mistake.

Back to that teacher-student bit: How often do we try to make a class live up to the one we had last fall or last spring, even though the members are totally different? "My shorthanders certainly aren't as good as the ones I had when I first came here," we say. Or worse: Do we expect one child in a family to measure up to an older brother or sister? "John certainly doesn't have Jim's ability in math, does he? Imagine a McGibbons not being good at math!"

Too much to live up to! Perhaps we as teachers need to concentrate on helping each student develop his own fine qualities. Is it possible that (as we Greens have been doing with Tiny) teachers sometimes overlook each individual's uniqueness in trying to make him live up to somebody else? Let us accept each student for what he is and work with him from there.



Eye-Minded Placement

The directions were simple enough. "Students at elite typewriters, put your margins at 12; those using pica machines, at 10." Yet, up goes a hand. "Is my machine pica or elite?" Mary wants to know. After you tell her, she asks, "And, where did you say to put the margins?"

Placing margins by eye-mindedness will eliminate these questions. In less than five minutes, Mary can learn to estimate an inch accurately. Encourage her to study the inch markings on the line scale until she has a good mental picture of the distance. Then, on a piece of paper, let her place two dots one inch apart. If she misses, it will only be by a space, and does anyone object if a margin is one space off? Once Mary can estimate an inch, it is easy enough to estimate an inch and a half or two inches. When you instruct in margins, instruct in inches.

The experienced secretary knows where to begin a letter by eye-mindedness. With your voice recording machine you can program a series of exercises to develop Mary's eye-mindedness for letter placement.

Let the first exercise give Mary practice in using the automatic vertical spacer. Mary listens to these instructions: "I shall give you three signals. When I call 'ready,' turn on your motors and pick up paper. When you hear 'insert,' insert your paper and type your name at the left margin. Hold down the automatic space key until it spaces your platen forward six lines. Type your name again. Continue automatically spacing and typing your name until you hear the signal to stop. Set your margins for one inch. Remember, there are three instructions: ready, insert and stop. You have 30 seconds. How many times can you type your name?"

Write this address on the chalkboard for exercise 2: Mr. Joe Adams, 13 Jay Street, Salem, Oregon. Give instructions similar to those in exercise 1. This time Mary types the three-line address instead of her name, leaving six line spaces between each copy.

The third exercise on the recording gives Mary practice in quick handling of paper. The recorder tells her: "Take four sheets of paper, stagger the bottom edges and put them on the left side of your desk, flush with the front edge. When you hear the signal, 'insert,' pick up the first sheet and insert it in the typewriter. Space down automatically six times from the top edge. Remove the paper from the typewriter. Stack it on the left side of your desk at the back. Pick up the second sheet and continue this inserting and removing of paper until you hear the signal to stop. You have 15 seconds. Your goal is the insertion of four sheets of paper."

In the fourth drill, Mary combines all the skills she has been practicing —quick insertion and removal of paper, the use of the automatic vertical spacer and the typing of an inside address. Again she stacks four sheets of paper on her desk. This time she combines the date line with the inside address, leaving six spaces between. She uses a separate sheet of paper for each copy of the address. Her goal is at least two complete addresses before the "stop" signal. Each drill is one minute long and Mary has three tries. At the end of each timing Mary is urged to maintain her goal. In the third timing, if she has maintained her goal, she should forge ahead to a new goal of three or four copies of the address.

As she checked Mary's transcripts, a university teacher remarked, "You can always tell when students have had training in eye-minded placement. They are much faster in letter output and they achieve higher rates in their transcripts."

DATA PROCESSING (Continued)

Another point: there are many hidden costs—unintentional but nevertheless expensive—that are likely to be overlooked in the establishment of this type of program. Here is a partial list:

- In order to use the IBM 402 accounting machine, the reproducer, the collator or interpreter, control panels must be purchased to supply sufficient materials for instruction.
- Key punch classes will use a large volume of key punch cards. At present, Edison Technical School is using approximately 1½ million a year.
- A large quantity of paper is needed for printing on the 402, carriage tapes for controls, and so forth.
- Many miscellaneous supplies, such as special blackboards, special diagrams, special charts, overhead projectors and testing materials are peculiar to this type of course.
- Tests and the time to administer them are required to carry on the vocational aptitude testing program.
- Freight, which is an item on all machines, is charged to the school. With most companies, there is a time lag of six months to a year in delivery of machines. Orders must be placed a year before a course is to begin.

Conclusions

After two years' experience in one of the newest fields of public education, we are in a position to make an appraisal of its successes and limitations.

As in any phase of education, success is due above all else to the capable, hard-working classroom teachers who have met unusual demands on their time, energy and resourcefulness. The experimentation, the revisions of courses of study as well as problems, tests and standards, all have contributed to a sense of satisfaction and accomplishment seldom achieved in any occupation.

Many phases still require much additional work and experimentation. The main need is to write new textbooks geared to the teaching operation. With their development will come a gradual growth in data processing education in public schools. With all the problems, however, Edison Technical School has proved that this program can be established successfully without greater cost to the taxpayer than that of any other course.

through the camera eye

DELTA TAU chapter of Pi Omega Pi was installed at Colorado State University, Fort Collins. James T. Blanford, Iowa State Teachers College, Cedar Falls, was the installing officer. Shown here are (front row, l to r): Dr. Blanford; Ramona Woodward, secretary-treasurer; Sharon Glahn, president; Rita Anderson, vice-president; Ruth L. Roberts, sponsor; (back row): JoAnn Brown, Diane Levein, Louise Fass, Corinne Clarida, Sharon Van Sickle, Earlene Monson.

DELTA RHO chapter of Pi Omega Pi was installed at Longwood College, Farmville, Virginia. Audrey V. Dempsey, East Carolina College, Greenville, North Carolina, was the installing officer. The members are (front row, l to r): Carol Barnes, Mary Rideout, Hattie Lasley, Diane Whitley, Brenda Duke, Iris Wall; (middle row): Dr. Dempsey; Gayle Jones, president; Lana Jo Tucker, vice-president; Marilyn Miller, treasurer; Pauline Brightwell, secretary; Mary Elizabeth Clay, reporter-historian; Dr. M. L. Landrum, sponsor; (back row): Judy Smith, Fran Gallahan, Frances Weaver, Frances Norton, Scheryl Gates, Frances Webster, Caroline Phillips, Dianna Euksuzian.

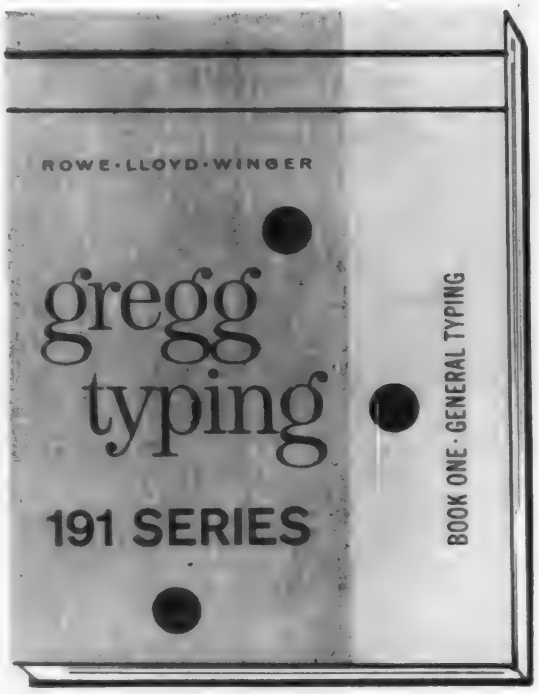
DELTA SIGMA is the new chapter of Pi Omega Pi at Baylor University, Waco, Texas. The installing officer was Ralf J. Thomas of Kansas State College of Pittsburg. Charter members pictured here are (seated, l to r): Frankie Rucker, Bob Anne McMullan, Beth Ann DuBose, Mary Anne Baxter, Joyce Gray; (standing): Connie Bull, Marianne Kennimer, Joe Frank Thornton, Mrs. John Lake (sponsor), and Jo Anne Baker.

PWAM!*

GT/191 SERIES

*production words a minute

BREAKTHROUGH IN PRODUCTION TYPING



- PRODUCTION BARRIERS DISAPPEAR with GT/191. This spectacularly new text trains students to turn out production work as rapidly as they copy simple paragraph material.
- PWCS (production word count system), the most revolutionary thing to happen in typing texts since 1902, EQUATES ALL KINDS OF COPY, providing a single standard of skill measurement.
- DRILL IN DEPTH develops double control of new keys, stresses technique, reduces need for remedial practice.
- PERFORMANCE STANDARDS, "PAR" indicated, encourage and challenge maximum performance.
- CLINICS provide individually tailored practice—capitalize on individual prowess, eliminate individual weaknesses, and ASSURE INDIVIDUAL PROGRESS.
- FIRST modern typing text available in a special TEACHER'S EDITION!!
- NEW TEACHING PLAN—you really teach with GT/191!

the TEACHER is important with

gregg typing / 191 SERIES

By LLOYD, ROWE, and WINGER

Write for "sixty-three reasons why GT/191 Series is my kind of typing text"

GREGG PUBLISHING DIVISION • McGRAW-HILL BOOK COMPANY, INC.

New York 36: 330 West 42 St. Chicago 46: 4655 Chase Ave. Dallas 2: 501 Elm St. Corte Madera, Calif: 201 Tamal Vista Dr.

Professional Report

NEWS SPOTLIGHT

Economic education

. . . A task force of the Committee for Economic Development has issued a report on economic education in the high schools. The report stresses the importance of the kind of economics teaching that will lead students to examine and think through major economic problems for themselves. The task force recommends that students achieve an understanding of a few essential concepts and a few major economic institutions—such as the marketplace, supply and demand, the corporation, labor unions, profits and wages—plus a knowledge of how these fit together in the functioning of the economy.

The task force feels that, wherever feasible, high school students should take a course in economics or its equivalent. They recommend that such a course be in the business education or social studies area.

Copies of the report, Economic Education in the Schools, are available for $1 each from the Committee for Economic Development, 711 Fifth Avenue, New York 22, New York.

Course revision

. . . About 100 selected Virginia business teachers met for a week recently to rewrite the State Course of Study for Vocational Office Training and Clerical Practice. Dr. Stuart Margulies, Center of Programed Instruction, Inc., and Dr. Bruce Blackstone, U.S. Office of Education, served as consultants. Through the co-operation of office equipment manufacturers and state colleges, the 20 working groups into which the teachers were divided were supplied with equipment and resource materials needed to develop units in the course of study and experiment with their practicability.

New Jersey

. . . is the latest state to attack the high school dropout problem. A pilot survey showed that about 13,000 of the 1,054,000 students in the school system would leave school next June without graduating. Dr. Frederick M. Raubinger, commissioner of education, said that a comprehensive, state-wide study of the dropout problem would be made on a permanent and continuing basis.

College openings

. . . are expected to rise next year according to a report by the Student Admissions Center, a private organization. A survey of 200 four-year colleges showed that 150 of them were ready to increase their freshman class next fall. The report estimates that the total number of freshman places in the country will increase 8 to 11 per cent.

PEOPLE

• Quentin G. Oleson, State University of South Dakota, Vermillion, has received his Ed.D. degree from the University of California at Los Angeles. His dissertation, "A Job Analysis of the Duties and Functions of Selected Public School Business Officials," was written under the direction of Dr. S. J. Wanous. Dr. Oleson has taught in high schools in South Dakota and California.

• Lois Adele Thompson, Kansas State College of Pittsburg, received her Ed.D. degree from the University of Oklahoma, Norman. Her dissertation, "Office Service Employment for Women College Graduates in Metropolitan Oklahoma City," was written under the direction of Dr. Gerald A. Porter. Dr. Thompson has taught high school, junior college and senior college in Oklahoma.

• Charles R. Walker, University of Oklahoma, Norman, has been awarded an Ed.D. degree by that school. Dr. Gerald A. Porter was the director of his dissertation, which is entitled "Business and Economics in the General Education Programs of Colleges and Universities." Dr. Walker has also taught at Oklahoma City University.

GROUPS

• The thirteenth annual New York State Registered Private Business School Conference will be held on November 30 and December 1 at the Manger Vanderbilt Hotel in New York City. The keynote speaker will be Paul B. Orvis, executive dean for institutes and community colleges, State University of New York.

• The Southern Business Education Association will hold its thirty-ninth annual convention at the Galt Ocean Mile Hotel in Fort Lauderdale, Florida, on November 23, 24 and 25. The theme of this year's convention is "Business Education United." The program will be as follows:

Thursday, November 23

7:45-8:45 a.m.—UBEA-SBEA Breakfast. *Presiding:* Vernon Musselman, UBEA, University of Kentucky, Lexington.

9:00 a.m.—UBEA—SBEA Opening Assembly. *Presiding:* Parker Liles, UBEA President, Georgia State College of Business Administration, Atlanta.

6:00-10:30 p.m.—Fellowship Dinner and Moonlight Cruise.

Friday, November 24

9:15-10:30 a.m.—First General Session. *Presiding:* Reed Davis, SBEA President, West Virginia Institute of Technology, Montgomery. *Topic:* "Is Business Education a Necessity?" *Moderator:* Harry Huffman, Virginia Polytechnic Institute, Blacksburg. *Panel:* Bruce L. Blackstone, Specialist, Office Education, U.S. Department of Health, Education and Welfare; Hamden L. Forkner, Professor Emeritus, Teachers College, Columbia University, New York; J. Leroy Thompson, Educational Director, *Wall Street Journal;* Carrol E. Waggoner, Supervisor of Business Education, Miami, Florida; Arthur L. Walker, State Supervisor, Virginia Business Education Service.

10:45 a.m.-12:15 p.m.—Divisional Meetings:

Secondary Schools. *Liaison officer:* Sara K. Zeagler, Blythewood (S.C.) High School. *Chairman:* Sarah Dean West, Sylvan High School, Atlanta. *Vice-chairman:* Ethel Plock, Ahrens Trade School, Louisville. *Secretary:* Marie Oesterling, Hewitt-Trussville (Ala.) High School. *Topic:* "Promoting a Balanced Business Education Program in the Secondary School." *Speakers:* Ora Murrell, Sylvan High School, Atlanta; Raymond L. Jones, East Carolina College, Greenville, North Carolina.

Private Business Schools. *Liaison officer:* Evelyn H. Withers, Ashley High School, Gastonia, North Carolina. *Chairman:* S. J. Drake, Broward Business College, Ft. Lauderdale. *Topic:* "Business Education and Manpower Needs in the 1960's and Beyond." *Speaker:* Robert E. Slaughter, Gregg Publishing Division, McGraw-Hill Book Company.

Junior Colleges. *Liaison officer:* Edith C. Mulkey, Decatur (Ga.) High School. *Chairman:* Mary E. McCain, Averett College, Danville, Virginia. *Vice-chairman:* Roscoe D. Perritt, Middle Georgia College, Cochran. *Secretary:* M. Elaine Graves, Perkinston (Miss.) Junior College. *Topic:* "Business Education in Florida's Community Junior Colleges." *Speaker:* James L. Wattenbarger, Florida State Department of Education.

Colleges and Universities. *Liaison officer:* Marie Louise Hebert, Breaux Bridge (La.) High School. *Chairman:* J. Kenneth Roach, University of Georgia, Athens. *Vice-Chairman:* Sara Anderson, Madison College, Harrisonburg, Virginia. *Secretary:* William Durham, East Carolina College, Greenville, North Carolina. *Topic:* "Current Problems in Higher Education." *Moderator:* J. Curtis Hall, Auburn (Ala.) University. *Panel members:* Wilson Ashby, University of Alabama, University; J. Frank Dame, Jones Business Colleges, Jacksonville and Orlando; Norval Garrett, Southeastern Louisiana College, Hammond; Parker Liles, Georgia State College, Atlanta; Vance Littlejohn, Woman's College, University of North Carolina, Greensboro; Martin Stegenga, Mississippi Southern College, Hattiesburg.

12:30-2:15 p.m.—Delta Pi Epsilon Luncheon. *Presiding:* Frances Causey, president, Xi Chapter, Gainesville. *Speaker:* Robert E. Slaughter, Gregg Publishing Division, McGraw-Hill Book Company. *Topic:* "Heritage and Horizon in Business Education."

2:30-3:45 p.m.—Sectional Meetings.

Basic Business. *Liaison officer:* Katherine S. Green, Arkansas State College, State College. *Chairman:* Kenneth Zimmer, Richmond (Va.) Professional Institute. *Vice-chairman:* Sue Waddell, University of Alabama, University. *Secretary:* Jean McArver, Ashley High School, Gastonia, North Carolina. *Speakers:* Elvin S. Eyster, Indiana University, Bloomington, "Why We Need to Teach Economic Concepts"; Vernon A. Musselman, University of Kentucky, Lexington, "How We Teach Economic Concepts." *Panel discussion.*

Administration and Supervision *Liaison officer:* Mabel Baldwin, Mississippi Southern College, Hattiesburg. *Chairman:* Richard D. Clanton, Louisiana Department of Education. *Vice-chairman:* Lytle Fowler, University of Mississippi, University. *Secretary:* Bernice Lovan, Titusville (Fla.) High School. *Topic:* "The Implications of Unity." *Panel:* Everett L. Groover, Business Education Supervisor, Jacksonville; Ruth Bruner, Northwestern State College, Natchitoches, Louisiana; Floyd Guillot, Industrial Finance and Thrift Corp., New Orleans.

Clerical Practice. *Liaison officer:* Ethel M. Plock, Ahrens Trade High School, Louisville. *Chairman:* Leon Ellis, Hillsborough High School, Tampa. *Vice-chairman:* Ellen Moore, Florence (Ala.) State College. *Secretary:* Doris Reid, Jordan Vocational High School, Columbia, Georgia.

Speaker: G. H. Parker, University of Tennessee, Knoxville, "The Challenge in Clerical Practice." *Topic:* "Clerical Practice Meeting the Needs of Students and Businessmen." *Panel:* Wilma Bidwell, Edgewater High School, Orlando, Florida; Gladys Garrison, Lakeland (Fla.) High School; Bonnie Nicholson, Bessemer (Ala.) High School.

4:00-5:15 p.m.—SECTIONAL MEETINGS:

BOOKKEEPING AND ACCOUNTING. *Liaison officer:* Marie Ann Oesterling, Hewitt-Trussville (Ala.) High School. *Chairman:* Harry Swain, Atlantic Christian College, Wilson, North Carolina. *Vice-chairman:* Eugene Egnew, East Kentucky College, Richmond. *Secretary:* Marguerite Sherrill, Franklin High School, Winchester, Tennessee. *Topic:* "Better Use of Instructional Materials." *Moderator:* R. D. Cooper, South-Western Publishing Company. *Panel:* Jean K. Wood, Greensboro (N.C.) Senior High School; Frank McLaughlin, Palm Beach High School, West Palm Beach, Florida; Dorothy K. Boakes, South Broward High School, Hollywood, Florida; Nancy E. Nelson, Chester (S.C.) High School.

SECRETARIAL. *Liaison officer:* Florence Beever, Andrew Jackson High School, Jacksonville. *Chairman:* Irvin H. Cole, University School, Florida State University, Tallahassee. *Vice-chairman:* Marjorie Kelchner, Winthrop College, Rock Hill, South Carolina. *Secretary:* Marie Louise Hebert, Breaux Bridge (La.) High School. *Topic:* "Unification in the Typewriting Program." *Speaker:* Alan C. Lloyd, Gregg Publishing Division, McGraw-Hill Book Company.

7:00-9:00 p.m.—CONVENTION BANQUET. *Presiding.* Reed Davis, SBEA president. *Speaker:* Calvin D. Johnson, Sperry Rand Corp., "Opportunities Unlimited."

10:00 p.m.—CONVENTION BALL.

Saturday, November 25

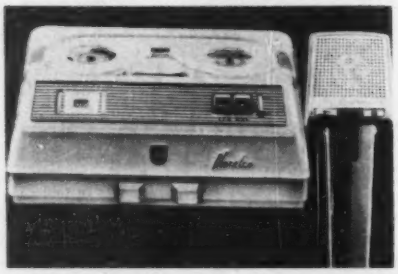
8:00-9:00 a.m.—SPECIAL BREAKFASTS. George Peabody College for Teachers. University of Tennessee. University of Mississippi.

9:15-11:15 a.m.—SECOND GENERAL SESSION. *Presiding:* James Crews, SBEA Vice-President, University of Florida, Gainsville. *Topic:* "The Interrelationship of Business Education to Business and the Arts." *Moderator:* D. D. Lessenberry, University of Pittsburgh (Pa.). *Panel:* Coleen Skinner, Norland High School, Miami; J. Curtis Hall, Auburn (Ala.) University; Eugene Youngert, senior associate of James B. Conant; Louis W. Menk, St. Louis-San Francisco Railway.

New Business Equipment

Tape Dictating Machine

The Norelco model 81R dictating and transcribing machine features a remote control microphone that has only three controls. The microphone

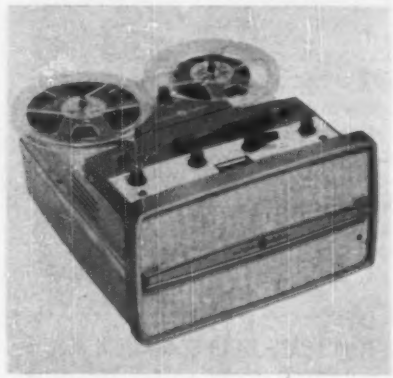


controls handle dictation, transcription, rapid review, start and stop. The microphone also serves as a speaker for playback and dictation review.

The machine uses a tape cartridge and has a buzzer to signal when the end of the tape is reached. The model 81R weighs eight pounds and has a list price of $219.50. Complete information may be obtained from the manufacturer, Dictating Equipment Division, North American Philips Company, Inc., 230 Duffy Avenue, Hicksville, Long Island, New York.

Portable Tape Recorder

The V-M model 730 is a monophonic, three-speed portable tape recorder. It has push-button controls and a record-play lever that prevents accidental erasure. Separate bass and treble controls are provided. A moni-

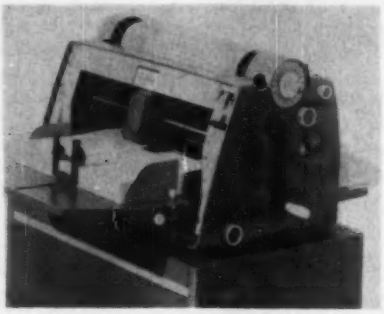


tor switch permits listening to a recording while it is being made from a radio, phonograph or other source. A pause button allows tape to be stopped while recording or listening. The AC power cord receptacle has built-in provisions for use of institutional three-wire grounding type AC cord.

List price of the model 730 is $169.95. It is manufactured by the Voice of Music, 226 Pipestone Street, Benton Harbor, Michigan.

Wide Capacity Duplicator

The Gestetner model 380 stencil duplicator has a duplicating area of 16½ inches wide by 13½ inches in length. It will also handle narrower widths down to post-card size. Other features include an automatic copy counter, automatic inking, automatic



paper jogger, variable speed control and automatic feeding of all weights of paper stock. It uses tubed paste ink.

Full details are available from the Gestetner Corporation, 216 Lake Avenue, Yonkers, New York.

Sound Filmstrip Projector

The AV-Matic model 14A285 is a rear-projection filmstrip projector combined with a 33⅓ rpm record player. Projection is on a 9 by 7 inch TV-type screen. One knob controls lamp, phonograph motor, amplifier and volume. It features a system that automatically rewinds the film as it is being shown. The projector can be operated either automatically or manually and has a built-in speaker.

The AV-Matic is made by the Audio-Visual Division, DuKane Corporation, St. Charles, Illinois.

New Products at a Glance

• Gestetner Corp., 216 Lake Avenue, Yonkers, New York, has announced a system for making projection transparencies with its Gestefax electronic stencil cutter. Copy and artwork is placed around one cylinder, and a stencil and special acetate sheet on the other. As the electronic scanner produces the copy on the stencil, it also produces a transparency on the acetate.

• The Strong-Pacer is an electronic device to improve typewriting skill. It consists of a copyholder-like stand with a pointer that moves down the page at an electronically controlled rate. The speed of the pointer is variable. Further information may be obtained from the distributor, Trico Service Company, 1337 South Garner Street, State College, Pennsylvania.

• Dennison Manufacturing Company, Framingham, Massachusetts, has introduced a notebook dictionary packaged with loose-leaf index divider pages. The dictionary lists 15,000 words and is available for two-ring or three-ring binders. The dictionary with one divider sells for 39 cents, with five subject dividers for 65 cents.

the turning point in the teaching of typing

You are looking at the IBM SELECTRIC Typewriter, newest addition to the IBM typewriter line. The unusual object above it is its typing element. No bigger than a golf ball, this single element makes possible the fastest, easiest way to teach typing, brings new economy to modern teaching methods.

Eliminates distractions! Precision-engineered, this single typing element does the work of a basketful of typebars. (Typebar tangles that so often slow down and confuse the student are completely eliminated.) Skimming across the paper just as your hand does when you write, it prints characters faster than the eye can see, eliminates the need for a moving paper carriage. Result: No distractions to keep students from concentrating on fundamentals. With no carriage jutting beyond the typewriter, the full-size SELECTRIC requires less desk area too.

Builds confidence! In many other ways the IBM SELECTRIC helps improve typing speed and technique, makes even beginning students more proficient. For example, a unique storage system actually remembers—when necessary—one character while another is being printed, paces it out at a measured rate to level "typing flurries," improve typing rhythm.

Conversion to other typewriters, incidentally, is accomplished in just minutes, because the SELECTRIC keyboard arrangement is essentially the same despite the many other features that make the SELECTRIC so different.

Minimum downtime! The IBM SELECTRIC is remarkably rugged. With a single typing element instead of multiple typebars, and a stationary paper carrier, maintenance requirements are kept at a minimum.

Moderate cost! We urge you to have the moderately priced IBM SELECTRIC shown in your school soon. We think you will agree that this newest development from IBM research is an important milestone in classroom progress. **IBM**®

A NEW KIND OF TYPEWRITER...A NEW WAY TO WRITE!

EXTERIOR of Cahill-Edmund Travel Service.

THIS NATIONAL SYSTEM was designed and installed by Arth R. Forselius, President of Cahill-Edmund Travel Service, shown checking statement.

BEN J. CAHILL, CHAIRMAN, Board of Directors, Cahill-Edmund Travel Service.

"Our **NCR** Accounting System saves us $6,500 annually... returns 171% yearly on investment!"

—Cahill-Edmund Travel Service, *Phoenix, Ariz.*

"Our entire accounting operation has been improved with the installation of the National Accounting System. Its speed and accuracy provide the best in customer service and give us complete management control at all times.

"With National, our bi-monthly airline sales reports are available faster and more accurately than with our previous method. Figures for bank balances and other accounting entries are at our finger-tips. This information is always available to help management make vital decisions.

"We highly recommend the National System to anyone who is interested in profitably improving accounting operations. It saves us $6,500 a year, returning 171% annually on our investment!"

Chairman, Board of Directors
Cahill-Edmund Travel Service

Your business, too, can benefit from the many time- and money-saving features of a National System. Nationals pay for themselves quickly through savings, then continue to return you an extra regular yearly profit. National's world-wide service organization will protect this profit. Ask us about the National Maintenance Plan. (See the yellow pages of your phone book.)

NCR *National*

*Trademark—Reg. U.S. Pat. Off.

ACCOUNTING MACHINES
ADDING MACHINES • CASH REGISTERS
ELECTRONIC DATA PROCESSING
NCR PAPER (NO CARBON REQUIRED)

THE NATIONAL CASH REGISTER COMPANY, Dayton 9, Ohio

1039 OFFICES IN 121 COUNTRIES • 77 YEARS OF HELPING BUSINESS SAVE MONEY